The Builder.

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Structural Features of the Paris Exhibition.

IN previous articles we have given expression to our opinion of the main architectural features of the Paris Exhibition, and we now propose to discuss in a general way some structural details of the principal buildings. As a preliminary it may be remarked that the only permanent erections included in the Exhibition are the two Art Palaces, the Horticultural buildings, the Trocadéro, the old Galerie des Machines (now somewhat altered and used for other purposes), and (unhappily) the Eiffel Tower, now chiefly useful as the groundwork of illuminations, and as exemplifying the operation of some new hydraulic lifts by the Compagnie de Fives-Lille. All the other palaces and pavilions are merely temporary, and will be swept away after the close of the Exhibition.

The method of construction most generally adopted consists in the erection of a light steel skeleton cased with wood, which itself is covered with decorative and other details composed of *staff*. This material is a combination of plaster and canvas formed and moulded in the following manner. A mould is first made of the detail to be produced, and into this liquid plaster is poured to form the external surface of the casting. Pieces of canvas previously steeped in plaster and water are then introduced and pressed into the moist plaster contained in the mould. In this way a strong crust about $\frac{1}{8}$ in. thick is formed, which is strengthened by wooden rods forming the interior framework of the finished casting. Expanded metal, wire network, and sometimes nets of strong cord have been employed as the bases for large plane surfaces of plaster and cement. Although several large pavilions are constructed almost entirely of timber, and others are of the lightest possible description, more than 38,000 tons of steel and 2,000 tons of iron have been used in the construction of the Exhibition buildings.

The "Entrée Monumentale," at the Place de la Concorde, has a framework of steel covered with wood and finished in staff as before described. It opens upon a pleasing approach to the two Fine-Art Palaces, the larger of which covers a site nearly ten acres in extent. As the subsoil is of sedimentary nature, and was at one time covered by the river, the employment of piles became necessary in the foundations. The materials used in the construction of this building are principally stone, brick, and rubble, and in some parts béton. Stone is employed exclusively for the front which faces the central avenue, but the outer walls generally are of rubble faced with stone, and the inner walls of rubble and brick, also faced with stone. A large quantity of steel is incorporated in the building, chiefly in the roof and in the balcony flooring. Cement work, armed with steel wire of large gauge, has also been applied to a considerable extent for roofing and other purposes. Altogether the roof includes some 6,000 tons of steel, and comprises a central dome about 230 ft. in diameter supporting a cupola of 23 ft. diameter, above which is a campanile, the highest point of which is 246 ft. from the ground level. The great dome, which was constructed by the firm of Daydé & Pillé, of Creil, is supported by four columns each consisting of two pairs of box-girders, between which spiral staircases rise to the balcony floor, where the plates divide, one pair springing out askew to form arches over the side bays, and the other pair continuing to the centre of the dome. At the point where the side plates of each column curve out towards the roof they are worked in scrolls, and these are replaced later by vertical and cross-ties. The roof trusses are so constructed that the resultants of all the lines of stress pass through the points of support to the ground, without subjecting the walls of the palace to strain of any kind.

The Petit Palais, whose architectural features we have discussed on a previous occasion, occupies an area of nearly $1\frac{3}{4}$ acres, and is representative of steel construction only to a very limited degree. We therefore pass on to the Exhibition buildings on the Esplanade des Invalides. The principal palaces on the left and right hand, devoted to French and foreign industries respectively, are of the lightest possible construction consistent with safety. Each palace has one main and two side bays, the main columns from the ground floor to the first floor being composed of three plates, one of which is bolted with angle-bars to the other two. Angles are also bolted to the edges of the plates and connected at intervals by stays. Transverse plate beams are provided for the floors in conjunction with lighter girders diagonally and vertically braced. From the first floor level one plate of each column continues up to the roof; another plate secured to the column by a gusset curves up to the centre of the roof, where it meets and is braced to another plate from the vertically extended plate of the column. The upper floors are formed almost exclusively of steel I-beams, with a filling of armed cement, and a covering of wood.

The buildings extending along the river-side on the right bank from the Pont des Invalides to the Quai de Passy, and on the left bank from the Pont des Invalides to the Gare du Champ de Mars, are lightly constructed, and only those constituting the horticultural section will escape demolition at the termination of the Exhibition. Owing to the fact that the soil bordering the river is of alluvial origin some care was necessary in the foundations. In some instances the framework of the buildings is supported on cylindrical piers of stone sunk in the earth. The holes necessary for the formation of these piers were not excavated in the ordinary manner, but were sunk with the aid of an ingenious arrangement by which a cast-iron cone, weighing some 30 cwts., was alternately raised and allowed to fall upon the yielding soil. When a hole had been made to the depth of 8 ft. or 9 ft. it was filled with fragments of stone and covered by a heavy casting of circular form. Some of the foreign

pavilions in what is at present called the Rue des Nations are built partly over the underground railway connecting the Invalides with the Champ de Mars. A notable building on the left bank of the Seine is the Palais des Armées de Terre et de Mer, having a façade of more than 370 yds. in extent. The framework is of wood connected by iron bolts and tie-rods, and the cement clothing of the skeleton was laid on in slabs, prepared with a backing of straw. These slabs were nailed to the timber frame, and the usual decorative coating of plaster was then applied.

Adjacent to this building is the pavilion of the Creusot Iron Works, in the form of a dome, about 165 ft. internal height and 140 ft. in diameter. The foundations nearest the river consist of rubble walls, and on the other side of the building of masonry piers. Inside the dome the centre portion of the floor is supported by a massive pier of rubble. The skeleton framework of the dome is built up of twenty-four ribs, which are heavy curved plate girders, the lower ends resting on steel rollers, each placed between two triangular steel beds attached to the top of a pier. At the height of 12 ft. the ribs are connected by horizontal box girders, and at similar intervals to the top by horizontal plate girders with diagonal bracing. A timber framework covers the outside of the dome, and upon this slabs of cement are laid and coated with a final layer of cement, which is painted red.

The palace of Navigation de Commerce, near the Pont d'Iéna, has a façade of about 480 ft., and is built with a timber framing on a system resembling that of the palaces in which steel forms the chief material of construction. The next building, devoted to forestry, hunting, and fishing, with a façade of over 600 ft. in length, has a family likeness to its neighbour, being due to the same architects, MM. Tronchet & Rey. On the right bank of the Seine, the conservatories, designed by M. Charles A. Gautier, are worthy of notice. The framework is of extremely light girders and angle bars, nearly all the metal being hidden by trellis-work. Each of these buildings measures about 270 ft. long, 100 ft. wide, and 69 ft. high, and comprises a central nave with galleries and loggias at each side. Close to the Pont de l'Alma is the large Palais de l'Economie Sociale, approximately 330 ft. long by 100 ft. wide, very appropriately erected by eight co-operative industrial associations. The structure is almost entirely of timber, and it is said that steel framework was not adopted because there was no trade association for metal workers. We believe the frame of the Congress Hall is of steel with a filling of cement. Encroaching on the river front, the platform carrying the structure is supported on piles driven into the river bed.

Although usually described as if they were separate palaces, the principal buildings on the Champ de Mars really form one huge structure, enclosing within its walls a U-shaped area of more than sixty acres. Neither an external view nor a consideration of written measurements serves to convey any adequate impression of this phenomenal aggregation. Of the countless throngs who wander through and lose themselves in the labyrinthian halls and galleries into which the interior is divided, very few have any idea of the task performed by the architects and engineers responsible for these monumental works. Those to whom it is permitted to look behind the veil see more than they can possibly carry away, and find it difficult to convey to others any adequate impression of such fragments as they have been able to grasp. With regard to the two lines of palaces at either side of the Champ de Mars, it may be remarked that they are symmetrical in respect of area covered, of height, and the direction of their axes, although the architectural treatment is entirely different. The Palais des Mines et de la Métallurgie, on the left hand, which finds a counterpart in the Palais des Lettres, on the opposite side, has a façade of about 315 ft. on the central avenue, and one of about 250 ft. parallel with the river. The grand entrance at the junction of the two façades is surmounted by a lofty dome, and is flanked by pavilions, each containing a circular staircase giving access to the upper floor, and in addition there is a great staircase facing the entrance. A campanile surmounting the porch contains a carillon of thirty-two bells operated by means of a keyboard. This palace includes four galleries and a quadrilateral hall surmounted by a lantern of similar shape. The steel framework of the building is sheathed in wood, over which is metal network and plaster, whilst the upper floors are formed of light steel girders, filled with cement on network and covered with wooden flooring. Adjoining the Palais des Mines is the Palais des Fils, Tissus et Vêtements, measuring in round figures 923 ft. long, 424 ft. wide, and 55 ft. high to the top of the lantern. Running throughout the length of the building are three main halls 88 ft. 6 in. wide, separated by two galleries 29 ft. 6 in. wide, and the two outer halls are bordered by other galleries and an arcade facing the Champ de Mars. In this way the palace is divided into nine longitudinal sections, each covered by a span of the roof supported by a series of trusses. In common with all the other palaces on the Champ de Mars upper floors are built in the galleries at the height of about 23 ft. There are no features of special novelty in connexion with the structural details of this building. Generally, it may be said that the stiff members are of I-section built up of angle-bars and plates. The columns are like plate-girders disposed with the webs in the planes of the trusses and extended at the upper part where the roof trusses commence, whilst the long struts and purlins are lattice-girders formed of light steel sections. Curved knee braces are attached to the columns for the support of the plate-built floor beams. For the erection of the steel framework a travelling tower was employed having a cantilever derrick and an upper working platform of ample size. This was first set up on the site of the arcade next the Champ de Mars, and by its aid the columns, connecting trusses, girders, and struts were erected seriatim from one end of the building to the other. The tower was then moved across the width of three spans and returned to a point parallel with the starting point, erecting another gallery on its way. A large travelling falsework was afterwards built in one of the wide spans, and followed on a track of 59 ft. gauge behind the travelling tower.

By the aid of this falsework the roof trusses, 88 ft. 6 in. wide, were assembled and erected. The traveller proper was mounted on four trucks running on rails 24 ft. apart between the gallery columns. Above the upper ends of the columns the top of the traveller was extended to the width of about 40 ft. After assisting in erecting the columns and trusses the tower was moved back longitudinally, when the overhanging derrick was utilised for fixing the purlins, whilst other connexions were made from the platform. In all, four platforms were provided for this traveller; the lowest, about 4 ft. above the ground level, carried the engine; the two next were supported by brackets; and the highest was 70 ft. above the ground, having two concentric arcs of rails for the derrick. When changing the movement of the tower and falsework from a longitudinal to a transverse direction the structure was raised by jacks, and the trucks were then turned through an arc of 90 deg., so that they could run on transverse lines to the desired position. The architect for this palace was M. Blavette, and the contractors were MM. Morsant, Laurent, Savey, et Cie., and the Société des Ponts et Travaux en Fer.

Crossing the Champ de Mars the visitor approaches the Palais du Génie Civil and the Palais de l'Education, forming one building, whose collective dimensions are very similar to those of the palace devoted to textiles. The decorative plaster work at the entrance pavilion, instead of being applied to metallic netting in the usual way, is fixed by sheets of thin metal cut so as to form projecting tongues. Another feature of this palace and of the adjoining Palais de l'Education is the extreme lightness of the steel sections of which the skeleton is formed. The architect, M. Jacques Hermant, has relied for strength less upon bulk of metal than upon efficiency of bracing. All the members are built of tee-bars, angle-bars, and plates, and no rolled girders appear to be used. This method of procedure certainly tended to reduce the labour of erection, as the small sections employed could be very readily dealt with by the workmen. The main frame of the joint building is formed by "bents" of steel columns and roof trusses, each bent having eight columns about 38 ft. high up to the roof trusses. Each column comprises two intersecting web plates and twelve angles. In appearance, the roof trusses consist of long and short spans occurring alternately; but, as a matter of fact, they are simply balanced cantilevers with independent connecting trusses. Rigidity is afforded by placing the columns in pairs braced by diagonal ties. All the trusses have inclined top chords and curved bottom chords with stiff vertical and diagonal web members of angles and plates. The top chords of T section include 2½-in. angle-bars, flange cover-plates, and 6-in. web plates; whilst the bottom chords of I section are built of 2½-in. angle-bars, flange plates, and 8½-in. web plates. Between the ends of the cantilever arms light lantern trusses are attached. The transverse bents are braced at the level of and above the balcony platforms by longitudinal lattice girders, as well as by purlins and portal-shaped braces between the columns. For the purpose of calculation, a load of 102 lbs. per square foot was assumed as the maximum for the floors, and 24½ lbs. per square foot for wind and snow pressure.

Three travellers were employed in the erection of the framework, and two of these,

precisely similar in construction, were used for erecting pairs of intermediate columns, their connecting spans, and the balancing cantilever arms. These travellers were mounted on rails of 23 ft. gauge, and by their aid one complete section of the skeleton was completed at a time from end to end of the building; the middle section was then set up, and finally the columns and trusses of the side galleries or aisles. The third traveller was used for the lantern trusses. During the erection of the first two sections the travellers were coupled by temporary transverse struts. Each traveller consisted of a timber-built tower of rectangular form with a working platform measuring 47 ft. 6 in. by 34 ft. 9 in., at the height of about 54 ft. above the ground level. Above this platform the lines, of 30 ft. 6 in. gauge, for a transverse girder crane were supported, at the height of 83 ft. 6 in. above the ground, by extensions of the tower posts. On the combined travellers the two cranes served all the space on the front and at one side, and were extremely useful in collecting together all the columns and truss members; and the operation of rivetting was facilitated by working platforms provided at various heights. All sections of the framework were started from the same end of the building, and when the traveller had arrived at the end of its course it was moved to the next line of rails and run back to a position parallel with the starting point. On the completion of the main halls the travellers were disconnected for separate use in the galleries. The lantern traveller, moving on lines of 29 ft. 6 in. gauge, had an extended base and a working platform 69 ft. above ground level. It was also provided with a derrick for raising truss members from the ground. M. J. Hermant was the architect and the contract was executed by Daydé et Pillé, of Creil, and the Société des Ponts et Travaux en Fer.

Adjoining the Palais du Génie Civil on one side of the Champ de Mars, and the Palais des Fils, Tissus et Vétements on the other, are the Palais des Industries Chimiques, and the Palais des Industries Mécaniques, the architect being M. Paulin. Each of these buildings is about 456 ft. long by 453 ft. wide, and their internal arrangements include two wide transverse galleries and three large halls 88 ft. 6 in. wide, separated by two galleries 29 ft. 6 in. wide. Beyond the outer halls are other galleries, and there is an arcade on the Champ de Mars front. In section these two structures very much resemble the Palais du Génie Civil, although the details of construction are not the same, and moreover the methods of erection followed and the plant used for this purpose were entirely distinctive. The Palais des Industries Mécaniques was built by duplicate travellers working together and raising three connected trusses by the aid of derricks. Most of the collecting of the parts and the rivetting was performed at ground level, where also the machinery was placed in order to avoid as much as possible the employment of men in elevated positions. At each stage of the erection one gallery and one or two sets of the cantilever arms and lantern trusses were finished. Two different travellers were used in connexion with the building of the Palais des Industries Chimiques. One of these was used as a falsework for assembling the truss members, which were hoisted separately by travelling gantries, and rivetted together on the upper platform. The longitudinal galleries were first completed, then the roofs covering the main halls and the transverse galleries were finished in one operation by the traveller and falsework.

It will be noted that the general order of erection and the direction pursued by the travellers were not alike in the case of the two palaces, but without reproducing plans and sections it would be impossible to make clear the exact details of procedure. Generally, it may be said of the Palais des Industries Chimiques that the traveller was followed by the moving falsework at a distance of one panel; and of the Palais des Industries Mécaniques, that sections of the framework, 118 ft. wide, were erected at one operation by the pair of travellers previously mentioned. MM. Daubet, Donon, et Cie were contractors for the Palais des Industries Chimiques, and M. J. Roussel was the contractor for the Palais des Industries Mécaniques.

The Château d'Eau, at the head of the central avenue in the Champ de Mars, is also the work of M. Paulin, and is built on piers of rubble to the height of the immense artificial slope, in the centre of which the fountains are situated. The upper floor is of cement, strengthened by the addition of iron rods. Immediately behind the Château d'Eau is the Palais de l'Electricité, the two buildings being separated by a broad gallery, and in the tower at each end of this a novel example of floor construction is to be seen. The piers are of pentagonal form, and from each angle a girder extends towards the opposite angle, which it does not reach because it is intercepted by a similar member springing from the adjoining angle. The Palais de l'Electricité measures nearly 230 ft. in height, and is one of the most remarkable buildings in the Exhibition. It is built almost entirely of steel and glass; its stupendous framework includes girders, each consisting of two box girders 2 ft. 6 in. wide, connected by horizontal sections and diagonals, forming altogether a girder whose section measures 10 ft. by 4 ft. Foundations several yards wide, above which are plates bedded in béton, serve to support the metal-work. Other plate-built girders are bolted to those first mentioned and curve towards the top, being joined at their upper ends by an arc supporting the roof. The sides of the palace are large windows with framework of light steel sections.

Beyond the Salon d'Honneur and the two Batiments de Chaudière is the structure forming the Galerie des Machines in the Exhibition of 1889. At the present time this building is divided into three parts, two being halls devoted to Agriculture et Aliments, and the third is the Salle des Fêtes, built inside the old Galerie des Machines. This hall will accommodate from 20,000 to 25,000 persons, and measures about 535 ft. by 460 ft. The dome, nearly 300 ft. in diameter, and 147 ft. high, is supported by eight columns in couples, each weighing 10 tons, and by eight others of smaller dimensions. Some difficulty occurred in connexion with the column foundations, in consequence of the loose nature of the soil and the presence of foundations left after the demolition of previous exhibitions. Excavations to the depth of from 10 ft. to 23 ft. were necessary, and piles were used in some cases. The excavations were filled with béton and iron rods. This fine hall is built almost entirely of steel, the skeleton being concealed by plaster-work in the usual manner.

To sum up the impressions conveyed by examination of the temporary structures in the Exhibition, it may be said that there is very little new to be learnt from a constructional point of view There is, nevertheless, ample evidence of the versatile genius possessed by French architects and engineers, and of their capacity for appreciating the adaptability of iron and steel for structural work of various kinds. Moreover, the lesson may be taken to heart that, although we may have been pioneers in the application of iron and steel, we have now on our very borders a nation capable of conceiving and carrying to a successful issue constructional works of this type of the greatest importance, and probably of unparalleled magnitude.

NOTES.

The Decoration of St. Paul's.

THE following letter, addressed to the Dean of St. Paul's, appeared in the *Times* and other daily papers on the 3rd inst.:—

"DEAR SIR,—Interest in the progress of the works at St. Paul's remains unabated, and it will be a source of satisfaction to all admirers of Wren to find that some portions of the stencilling and some of the wooden rosettes which are attached to the stonework have been removed from beneath the dome. We venture to express the hope that the experiments now in hand will result in the cessation of work which, in our opinion, is out of sympathy with the character of the building and injurious to its dignity. We would specially direct attention to the panels which have been introduced, without reference to Sir C. Wren's intentions, into the spandrels upon each side of the diagonal arches of the octagon.

A new and prominent feature is also being added to the building which is open to grave question—namely, the red and gilded iron railing now being placed upon the main cornice. If a railing be necessary in this position to enable the mosaic and painted decorations to be seen, we respectfully submit that it should be something extremely light, after the manner of many good examples in Italy, and that it should be devised so as to carefully abstain from affecting the proportions of the building or interfering with the design of the attic. The railing in question seems to us to have both these defects, and in this regard differs from the old railing at the west end, which not only avoids any interference with the architecture, but is a thing of beauty in itself.

We trust that this new railing may be reconsidered in greater sympathy with the architectural demands and qualities of our metropolitan cathedral and, if possible, abandoned.

In the interests involved we are giving publicity to this letter, and remain,

Dear sir, yours very faithfully,

J. M. BRYDON.	ERNEST NEWTON.
JOHN BELCHER, A.R.A.	J. OLDRID SCOTT.
JOHN F. BENTLEY.	LEONARD STOKES.
W. D. CARÖE.	A. SUGELOW.
EDWARD W. MOUNTFORD.	JAMES BROOKS.
THOS. E. COLLCUTT.	E. R. ROBSON.
MERVYN MACARTNEY.	ALEXANDER GRAHAM.
ERNEST GEORGE.	BASIL CHAMPNEYS.
EDWARD S. PRIOR.	J. J. STEVENSON."

We presume that the unknown name of Mr. "A. Sugelow" represents in reality Mr. B. Ingelow. To this letter the Dean of St. Paul's gave, on the 6th, what he evidently thinks a very piquant and telling reply, as follows:—

"West Hoathley Vicarage, August 3, 1900.

Dear Sir,—I have received this morning an address signed by yourself and a number of your friends relative to 'the decoration of St. Paul's,' which appears also in the *Times* of this morning. I will place it before my colleagues of the Chapter,

when I have the pleasure of meeting them after the vacation.

I regret to notice that so far as I can remember not one of those who sign the address has shown his interest in the decoration of St. Paul's by subscribing to the fund raised for that purpose.

Yours truly, ROBERT GREGORY.

J. M. Brydon, Esq."

It does not seem to have occurred to the Dean that people who take a keen and an enlightened interest in the architectural and decorative treatment of the interior of St. Paul's are not very likely to subscribe, and could not be expected to do so, when they have no confidence as to what use will be made of their money. To our thinking the fixing of a metal railing along the edge or nearly the edge of the cornice is a most pernicious proceeding, seriously injuring the monumental effect of the architecture, and the fact of its being supposed to be necessary in order that people may see the decorations properly is in itself a condemnation of that portion at least of the decorative scheme. The decoration of a large interior should be a scheme to be visible and effective, as a whole, from the spectator's ordinary standpoint on the floor of the building. If it is not, and you have to go along cornices and other points of vantage to see its details, the scheme is obviously not what it ought to be.

Malmesbury Abbey.

A GOOD deal of attention has lately been drawn to the restoration of the fine old fragment of Malmesbury Abbey Church. The scheme, according to a recent article in the *Western Daily Press*, includes a good deal of necessary repair to the pinnacles and roofs of the nave aisles, and also to the remains of the "crossing" and piers which formerly supported the central tower. The west front, of which the southern half remains to a considerable height, has also become dangerous and it is proposed to rebuild the column of the south arcade between the present west wall and the old west front, and also the clearstory above it, so as to form an adequate support for the ruined part of the church. The estimated cost of the restoration is 10,000*l*. In the *Builder* of March 2, 1895, will be found a general view of the Abbey from the south, and a large ground-plan which clearly illustrates the parts of the building now undergoing repair. It is, we understand, proposed, if funds permit, to restore the nave to its old proportions by rebuilding the destroyed north-west angle and the three bays of the north arcade, but for this further funds would be necessary, and the most important matter at present is to preserve the valuable remains of Norman date that exist.

Mortgagees' Law of Light.

AN interesting and important addition to the judicial decisions on the law of light is made in the recent case of Born *v.* Turner, which will be found at length in Law Reports [1900], 2 Chancery Division, 211. As every one knows, there is a cardinal principle that a grant by a man of a portion of property carries with it the right to the easement of light over that portion which is not granted, so that if the, so to say, reserved part is subsequently sold, it is a servient tenement. In the recent decision of Mr. Justice Byrne this same principle is shown to apply to a grant by a mortgagee of part of a mortgaged property. This is the long-and-short of the decision, but it will be seen that it is a distinct amplification of the legal principle. There can be no doubt that this decision is sound, but, like most judicial judgments on the law of light, it is one enlarging and improving the position of the owner of the dominant tenement. There is also in this case to be noted a point which bears on recent discussions on this subject. The building of which the light was said to be obstructed was a vinery, and in the official reports we find this statement:—"His lordship considered the plaintiff had proved some obstruction, and he therefore granted an injunction with costs." In a recent article we asserted that damages should always be given in place of an injunction, and can any one in this case doubt that substantial justice would have been done by the granting of damages? It may be annoying to be deprived of one's vinery, but if one is, the person who renders it useless may well pay damages, which would consist in the money produced by the sale of it, less what the materials would realise on the sale, and a further sum for diminished amenities. To prevent the adjoining owner from building because a vinery is darkened appears to reduce the right to light to an absurdity and an injustice.

"Profitable Sanitation."

IN a long letter to the *Times* last week Dr. G. V. Poore drew attention to an example in "profitable sanitation" which has been set by the Manchester Corporation. He referred to the utilisation of Carrington Moss for the reception of the refuse from the city of Manchester. The results are certainly striking. In thirteen years the estate of 1,100 acres has absorbed more than half-a-million tons of refuse—"ordure and muck for fertilising, clinker and hard material for road-making"—and the rentals have increased during the period from about one shilling to two pounds an acre. The success of this experiment has induced the Corporation to purchase about 2,500 acres of the adjacent Chat Moss, with a view to treating this estate in a similar manner. But as Dr. Poore gives no figures as to the cost of collection and carriage of the refuse, it cannot be said that he has proved that the method of disposal is really "profitable"; it may be merely the least unprofitable method which the Corporation can discover. And when he goes on to ask, "Is there no possibility of bringing about a profitable interchange of produce between the great cities [of England] and the unreclaimed bog-land of Ireland?" we fear that the answer must be that the possibility is of the smallest. The cost of transport and handling would be too great. That the Manchester Corporation is not as enamoured of its system of refuse-disposal as Dr. Poore appears to be is shown by the fact that privies and midden-closets are now being abolished in favour of water-closets. Undoubtedly it is a great pity that so much valuable manure should be annually lost to the country, but as long as farmers find it cheaper and better to use imported and manufactured manures, there is little hope of any radical change being made.

The Reno Inclined Elevator.

FROM the point of view of shopkeepers much can be said in favour of moving "stairways." Two or three years ago we gave a description of one of these installed in a large retail shop in New York, and mentioned some of its advantages. Since that time the "Reno Inclined Elevator" Company has made great progress, and has installed numerous moving stairways, not only in shops, but at railway stations. The New York elevated railways use these stairways; there are five at the Paris Exhibition; and one was opened to the public on Monday at the Crystal Palace. We had the opportunity of making a thorough inspection of the latter last Friday, and found it in every way satisfactory. The motion was almost absolutely steady; there was none of that wavy motion which is sometimes complained of in similar appliances. The moving incline consists of a series of hardwood boards, each about 4 in. wide and 2 ft. long, and each has its own rollers, which run along angle iron rails. On the boards are fastened a series of rubber covered longitudinal ridges, on which the passenger stands. The feet of the passenger are slid off at the landing by means of a comb of cast-iron prongs, which fit between the rubber ridges. The stairway at the Crystal Palace has a capacity of 3,000 passengers per hour, and it is intended to put up six or seven more to the various galleries. When it is fully loaded with passengers about seven horse power is required, but when no one is on it the horse power the motor needs to exert is only one. The working is economical, as an electric motor only consumes current in proportion to its load. It may be started or stopped at either end by simply pulling a handle. An essential part of the stairway is the moving handrail which is worked off the same shaft, so that they both travel together. In this particular case belt-driving is used, but of course the motor could be geared directly on to the driving shaft if desired. Its price is greater than that of an ordinary electric lift, but its capacity is five or six times as large, and in the case of a lift the fire insurance companies oblige people to have a staircase as well, so that to use a lift is much more expensive. Taking electricity at 4d. per unit, the cost of carrying a thousand passengers per hour up a moving stairway 20 ft. high would be about sevenpence.

Prize Designs at South Kensington.

THE selected works in the National Competition of Schools of Science and Art and Art Classes are open to the public to view in one of the Iron houses of the South Kensington Education Department. There is nothing encouraging in the work done by the architectural students, among either the measured drawings or the designs. The scarcity of exhibits in the measured drawings class is to be regretted; country schools of art should have exceptional opportunities for outside measuring work, which, combined with evening classes in building construction and drawing from life, make a good basis for an architectural education. That these opportunities are neglected, and that the subjects students are set to work upon are ill-chosen and devoid of such qualities as would be likely to inspire the student to do his best, is only too plainly evident in the poor examples hung at South Kensington. With the measured drawings at such a low ebb it is natural to find no high standard among the architectural designs, for design is not an accomplishment to be procured at art schools or from text books, but is the

outcome of previous experience among materials and among the buildings of the best periods of English architecture. For example, the three designs from Glasgow for a bachelor's country mansion that gain the distinction of bronze medals are commendable for dignified and monumental planning, but we question the utility of setting students to design in the Neo-Greek style. Young students can have only a text-book knowledge of Greek architecture, and, moreover, they should work in a style more appropriate to their own country. A silver medal is deservedly won by Mr. Shirley Harrison with his design for a market hall in a country town; but the materials should have been more clearly indicated on the drawings, and the detailing is far too meagre. A design for a village hall by Mr. F. J. Horth, with photos of carefully-prepared models, would have been better placed but for the absurd battening of walls and chimneys — a new and preposterous fashion with some of the younger school of English architects.

Decorative Designs at South Kensington.

By far the best design for internal decoration, among the students' work, is that by Miss Winifred L. Stamp, of the Regent-street Polytechnic School of Art, in her design for the decoration of the entrance hall of the Polytechnic. It is excellently drawn, and shows the essential qualities of decorative design in conception, arrangement, and in the charm of the colour scheme. The furniture and wood-carving exhibits show a tendency to smallness and overcrowding, a fault it is to be feared very common in work of this class. Mr. W. A. Martin, of Liverpool School, takes a gold medal with his design for a printed silk hanging; many other of the designs for silk fabrics show considerable taste and skill in the choice of colours. It is noticeable that the best work in this class comes from schools where textile design is done in association with the materials and the method of its production. The embroidery and needlework maintain a high standard. The designs for white embroidery accompanied by worked specimens, from Belfast, are good in design and well adapted for the materials in which they are thoroughly well carried out. The most encouraging work in this section is from the Royal College of Art, by Mr. Robert A. Dawson, consisting of a design for a fire-screen accompanied by the executed work. The design is for appliqué work, well arranged and good in colour. In working it out, the head and neck of the figure would have been better in appliqué than in long stitches.

THE BRITISH ARCHÆOLOGICAL ASSOCIATION AT LEICESTER.

THE Mayor of Leicester having invited the British Archæological Association to hold its annual congress this year in that town, a large party of the members assembled in the Museum Buildings on Monday, July 30, at 2.30 p.m. The proceedings commenced by the Mayor and Mayoress, Alderman and Mrs. Windley, formally welcoming the visitors to Leicester. The Marquis of Granby, the President of the Association, being unable to attend the meeting, the High Sheriff of Leicestershire, Mr. R. Smith-Carington, F.S.A., opened the fifty-seventh congress, and delivered a very able inaugural address. Dealing with the mythical history of Leicester and the tradition which ascribes its foundation to King Lear, and his burial in a vault beneath the river Soar by his daughter Cordelia, he said the place was known from the very earliest ages as a place of importance. Leicestershire was comprehended in the territory of the Coritani, but after the Roman subjugation it formed a part of the province of Flavia Cæsariensis. By the Romans Leicester was named Ratæ or Rhatæ Coritanorum, derived from the ancient British Rath Coranied, meaning a fortress or stronghold of the Coranians. The Roman roads Watling-street, Fosseway, Via Devana, and Saltway crossed portions of the county, and two of these—the Via Devana and the Fosseway—passed through the town itself, but their course cannot now be accurately identified. Roman remains in considerable abundance and of great importance have been discovered in Leicester, many of which are now preserved in the Museum. Under the Saxons, Leicestershire formed part of the kingdom of Mercia, and Leicester was its chief city and the seat of a Bishopric, and so remained until Ceolred, the seventh and last Bishop, removed the see to Dorchester. A mint was established at Leicester in the reign of Athelstan and continued to issue coinage until the time of Henry II. When the Danes invaded and overran England in the ninth century, Leicester fell into their possession and became one of five great Danish burghs. It was recovered from their rule by the renowned Princess Ethelfleda, the warlike daughter of Alfred the Great, in 920, together with Chester, Derby, Northampton, and other towns. This wise, patriotic, and enlightened princess did much for the security and advancement of Leicester. She was the great fortress-builder of the tenth century, and is said to have rebuilt the walls of the town and added largely to the fortifications. She also reintroduced Christianity into the county and restored the churches which the Danes had destroyed. She died at her Castle of Tamworth in 922. Mr. Carington then passed in review the history and archæology of Leicester under the Normans, down through the succeeding centuries until the period of the great Civil War, in which struggle the county and town of Leicester took the Parliamentary side. With some comments upon the various places to be visited during the week a very excellent address was brought to a close with a cordial vote of thanks to the author, proposed by Dr. W. de Gray Birch, F.S.A., who said the Mayor in his opening remarks in welcoming the Association had referred to the loss of the title of "city" which Leicester for many centuries possessed. He, Dr. Birch, did not think there would be much difficulty in recovering the ancient designation if Leicester were to proceed upon the same lines adopted by Westminster within recent years. Although it was thought there could not be a city without there being an Episcopal See and a Bishop, yet Westminster was an example to the contrary, and he thought if the Corporation of Leicester sought out the way by which Westminster had attained its dignity, and adopted the same course, they would meet with the same treatment. The opening proceedings then terminated, and the party were conducted to the Museum to inspect the large collection of Roman and other antiquities preserved there. Mr. Montagu Browne, the Curator, gave a lucid description of many of the objects of interest under his charge. The Museum possesses one of the most perfect examples of a Roman milliare known in this country. It has suffered considerably from its former exposure, but the inscription can still in great part be deciphered, and reads as follows:—

IMP CA S
DV TRAMN PARTH FD ..... EP
AMN HADRIANI ..... B
POT IV COS III A RATIS
H

The date of the erection of the stone is A.D. 120-121. The examples of pottery found in Leicester and the suburbs, together with the large number of architectural remains, tiles, and tesselated pavements all carefully labelled with the exact localities in which they were found, render a visit to this Museum most instructive and interesting. Anglo-Saxon and Mediæval relics are also very numerous. The prehistoric age is well represented by many fine specimens of flint and stone implements. At the conclusion of the visit the members separated to meet again later in the evening, when they were entertained by the Mayor and Mayoress at a conversazione given in the Museum Buildings and Art Galleries, which contain some celebrated pictures by modern painters purchased by aid of a special bequest of 5,000*l*.

Tuesday, July 31.

A special tramcar, provided by the tramway company, conveyed a large number of the members from the hotel to the Great Northern station, over a mile distant, whence they took train, at 9.55, for Hardy Stathern station. On arrival there waggonettes and other carriages were waiting, and the party, which had been augmented by other arrivals, enjoyed a lovely drive through the woods to Belvoir Castle. There is little to be said of the present castle from an archæological standpoint, as it is mostly a modern erection by James Wyatt. In 1816 the old castle was destroyed by fire. There are some remains here and there of the old walls, and in the basement are several large groined and vaulted apartments, now used as wine cellars. The art treasures, the fine collection of pictures, and the magnificent gold and silver plate were inspected and admired. The party then took luncheon, subsequently examining the ruins of the foundations of the Priory of St. Mary Belvoir, which was a Benedictine establishment and a cell of four monks of St. Albans, in Hertfordshire. The foundations only remain of parts of the buildings, and they have been greatly disturbed by the works of the light estate railway which has been carelessly permitted to cut through the site. Although there is scarcely anything archæological now remaining at Belvoir, yet the history and records of Belvoir Castle go back to Norman times. The old castle passed through many vicissitudes during the turbulent reigns of Stephen and Henry II., and in the Parliamentary war it was lost and won and won and lost again by both parties several times over. Mr. W. A. Carrington, who has been for a long time engaged upon the Rutland archives furnished a valuable and lengthy paper upon "Belvoir Castle, the Priory and Monuments," considerable extracts from which were read by the Rev. A. J. D. Astley. The evening meeting was held in the large Committee-room at the Town Hall under the presidency of the High Sheriff, Mr. R. Smith-Carington, when Dr. W. de Gray Birch gave a description of some of the charters and other records of the Borough of Leicester. In the course of his remarks Dr. Birch said a charter in itself was simply a writing. The word charter was connected with the word character, and so the charter meant a document covered with characters. A charter could only be given by someone who had something to give, and the charters they would consider that evening were grants by the Sovereigns of England, giving away something they were entitled to receive or possess—giving it away to someone else, to a corporation or individual who was desirous of acquiring that possession. Had it not been for the charters granted to the burgesses of Leicester the town would simply be a parish or a conglomeration of parishes. It would be governed by the lord of the manor. But the moment the king had granted to his faithful subjects in Leicester certain privileges the city or borough or town sprang into being. They knew nothing of the local management of Leicester until the twelfth century. At the end of that century King John —whom he, the speaker, regarded as being by no means so black as he had been painted—recognised the value of more closely knitting together the interests of the sovereign and the people, and he granted the first charter to Leicester, so far as they knew. It was he who first called the inhabitants of Leicester burgesses. This was a very valuable charter indeed, because in those days no man might go out of his parish without permission.

Leicester was very fortunate in the number of its charters. Three were granted by Henry III., and twelve or fifteen by Edward III. Every succeeding king was approached by the Corporation of Leicester to confirm the charters granted by his predecessors. That was a very important thing, and ought to be done even at this present day. A charter was a very valuable possession indeed. They could do nothing without it, and could do everything with it. A charter was above the law, for if an Act of Parliament was passed contrary to any clause of the charter they had only to produce the document in a court of law and say, "Here is our privilege which was granted in perpetuity; until that is altered by the sovereign at our surrender you can do nothing." The charters were worth the whole

existence of the borough as a borough, and if they were lost or damaged the people of Leicester would be liable to be deprived of some of their privileges. A large number of the charters were suspended on the walls for examination. Many of them, however, are at Cambridge University at the present time, where they are being edited by Miss Bateson. Dr. Birch advised that every charter should be copied in its Latin and translated, so that every inhabitant from burgess to youngest man should know what it meant and contained. The long series of charters ends with Charles II.

Wednesday, August 1.

The weather to-day was dull with heavy rain at times, nevertheless a goodly number of the members set out from the hotel in carriages for a driving day. The first place visited was Kirby Muxloe, where the remains of the old moated manor house known as Kirby Castle were described by Mr. Alfred Gotch, F.S.A. The house must have been very extensive, but only the gatehouse and some portions of towers now remain. Mr. Gotch had prepared plans of the existing buildings and an outline plan of the foundations of the entire residence. The exact date of the building is not known, but it is believed to have been erected by Lord Hastings about the year 1476. The "maunch," the heraldic form of a sleeve, the cognisance of the Hastings family, is perceptible on the canted angle of the right hand turret in the diaper of blue bricks which is worked in a diamond pattern over most of the walling, and the initials "W. H." are carved over the archway of the entrance. It is of red brick, with stone windows and doorways and other dressings, but the stone has been used sparingly and only in the central block. It was fortified and surrounded with a moat which is still wet. The lower stories of the octagonal towers flanking the entrance gateway are pierced for the cannon of the period, and are elsewhere loopholed for archery. The grooves for the portcullis are very perfect, and the circular turret staircase of brick is in good preservation, otherwise the remains are much neglected and are going to decay. Leaving Kirby the party proceeded to Groby, where Mr. I. C. Gould gave a short paper upon the history of Groby Hall and Castle, from which it seems that the oldest part of the Hall was built by one of the Ferrars family, who possessed the property for some 200 years, most probably out of the materials of the ruined castle close by; the windows, however, in that case must be later insertions. Edward Grey, who became Lord Ferrars of Groby, was the next possessor, and from him descended Thomas, first Marquis of Dorset, who, in the latter part of the fifteenth century, built the brick portion of the present patchwork mansion. He died in 1501. Leland visited the place in 1540, and in his "Itinerary" has left a description of the buildings as he saw them. Much that Leland saw has disappeared, but this part remains as described by him. Perhaps the most interesting of the associations of Groby is that connected with Elizabeth, the Queen of Edward IV., who passed much time in this old hall. Passing to the back of the hall, under Mr. Gould's guidance, the members were shown the keep mound and a few adjoining earthworks, all that now remain of the once important castle of Groby. The castle was destroyed by Henry II. at that critical period when he reduced the power of the lords so effectually after the feudal revolt of 1173-4, and never from that day was any attempt made to rebuild the castle. No one can say when the earthen mound was first raised. It may be that this fort, like that at Bakewell in Derbyshire, owes its first existence to the troublous times of the Saxons and Danes when, early in the tenth century, the neighbouring town of Leicester was so hotly contested. In the absence of any evidence to the contrary, it may also be that the mound was thrown up by the Norman lord in the eleventh century. Whether its existence is due to Saxon, Dane, or Norman, it is tolerably certain that its defences at first must have been of wooden stockades or palisades, and that many years must have elapsed before the stone keep appeared upon its summit, the remains of which in solid masonry still exist. From Groby the archæologists proceeded to Ulvescroft Priory, where Mr. Patrick, hon. sec., read a paper upon the history of the house and described the remains of the buildings. Situated within the borders of what was anciently known as the "wast" or forest of Charnwood, described by Burton in 1622 as a "dearne and solitary place," Ulvescroft Priory was originally founded by Robert Earl of Leicester, nicknamed "le bossu," the hunchback, for eremite friars about the year 1134. These friars most probably belonged to one of the very many independent brotherhoods which existed without any distinctive denomination, for the order of Austin friars had no existence at that early date, and the older order of Austin canons, although well known, was not fully established until 1139. All that is known concerning these early friars of Ulvescroft is that they "professed a regular life," and that none could assume the office of priors, "except elected by common consent of the brethren according to the rule of the blessed Augustin." The great preaching orders of friars were not established by Papal Bull until 1215-16. Mr. Patrick illustrated his remarks by a ground plan of the priory, enlarged from one drawn by the late Mr. Gordon Hills in 1862, no alteration in the remaining buildings having taken place since that date. Some parts of the ruins are of the Early English period, consisting of a portion of the western end of the south wall of the nave, with the triangular head of a buttress partly built into the later tower wall, and two doorways in the south wall, one of which opened into the north walk of the cloister, the other into a sacristy. There are also the remains of a window of this period, situated sufficiently high up to enable the cloister roof on this side to pass beneath it. With the above exceptions the ruins of the church as we see them to-day belong to the fourteenth and fifteenth centuries. The Early English Church probably consisted only of a nave and chancel. Toward the middle of the fifteenth century the west end of the nave was taken down to allow of the erection within its length of the present tower. The weathering of the steep roof of the nave may be seen on the eastern face of the tower wall, and also traces of the flatter roof which succeeded it on the erection of the upper story towards the end of the fifteenth or early in the sixteenth century. No traces remain above ground of the north aisle except a little part of the north-west wall, with a doorway of late date, which opened into a turret at its north-west angle. Remains of the large windows which lighted the chancel show them to have been of very elaborate work, and there are remains in the south wall of the chancel of what must have been a very beautiful canopied sedilia of three seats, with a piscina adjoining. Some of the corbels which carried the principal timbers of the late flat roof remain, and a good deal of the early plaster still adheres to the masonry. Of the domestic buildings of the priory there are more remains than of the church, although they are but fragmentary. The west wall of the guest house has remains of two Early English windows now built up, and some roof timbers of the sixteenth century. It is now used as a barn. Of the refectory, which occupied the south side of the cloister, only portions of the south wall remain, with indications of the pulpit which was corbelled out from the wall. The parlour, situated at the south end of the east walk of the cloister, remains and is now part of the farmhouse. The ground between the north wall of this house and the south wall of the church is now quite open, and one can only conjecture that next to the parlour was the slype and beyond it the square chapter-house, and then the sacristies close to the church. The walls are of Early English date, but the windows are insertions of the Tudor period. In the floor of this apartment, which is of square red tiles, at about the centre, is a circular stone 19 in. in diameter. From this stone the tiles are laid in curved form, north and south, the whole length of the room, radiating outwards east and west in the shape of the arms of a cross, the tiles being cut to suit the curves. There is no clue to the meaning of this curious arrangement, but the stone has a deep dark red stain upon it, which local tradition says is blood. The whole of the buildings were surrounded by a wall, which in parts remains, and beyond the wall a moat, which also can be traced; the moat terminated at the north and south ends in a series of fishponds, which extended along the entire west front. Pouring rain coming on again a hasty retreat to the carriages was made, and the party departed for Newtown Linford for luncheon. Afterwards the drive was resumed, and a visit made to the ruins in Bradgate Park, the birthplace of the unfortunate Lady Jane Grey. The chapel contains a fine altar tomb, with recumbent effigies of a knight and lady; but who they represent is not known. Passing through Thurcaston, the birthplace of Latimer, Leicester was reached about six o'clock. The evening meeting was held in the large room of the Grand Hotel, and was well attended, under the chairmanship of Mr. Perkins Pick, the President of the Leicestershire Architectural and Archæological Society. A paper was read by Mr. C. H. Compton, V.P., on "The Abbey of St. Mary de Pratis," which was founded in 1143 by Robert Earl of Leicester, the same who founded the Priory of Ulvescroft. The chief historical event connected with the Abbey is the reception by the Abbot of the fallen Cardinal Wolsey and his death there in 1529. A paper on the "Roman Roads of Leicestershire" was also read by C. J. Bellairs.

The report of the proceedings of the remaining three days will be given in our next issue.

MUSICAL INSTRUMENTS AT THE CRYSTAL PALACE.

WITH musical instruments in their main function as producers of musical sounds we are not directly concerned in these columns. But they form a very interesting class of objects even when merely studied by the eye in their dumb state, and we recommend our readers, even those who are not specially musical, to take an opportunity of inspecting the collection of musical instruments, from the most ancient to the modern period, now on view at the Crystal Palace. Many of the ancient ones are exceedingly interesting as examples of what may be called the naïve ingenuity of half-civilised people in fashioning something which will produce such musical or quasi-musical sounds as they desire to produce; and modern instruments show a great deal of ingenious and highly-finished make and mechanism. Few of those, for instance, who hear an orchestra from time to time, and know that bassoons are among the instruments (for they see the word down in the list of the band appended to the programme), have any idea of the peculiar and ingenious construction of a bassoon, and the manner in which, to bring it to a convenient length, the lower part of the tube is returned on itself, the whole tube being worked, we believe, in one piece of wood at first, and then cut and joined the reverse way, the lower part having a kind of boot form; a very neat achievement in woodwork, to say the least. It is interesting to trace the gradual development of the different wind instruments,—flute, oboe, and clarinet, from the simpler forms to the more highly finished and elaborated instruments of the present day. Among the curiosities of the collection is a glass flute, date 1812; we believe a good many were made at one time. The tone would probably have been poor. Then there are the exceptional instruments, of exceptional shapes; the krumm-horn ("crooked horn"), a wood instrument with an angle in the middle which gives it rather the shape of a prawn; and the basset-horn, a wood wind instrument, the use of which was dropped for some time and has been revived; it is something like a clarinet with the mouthpiece end, for two or three inches, bent at an angle, and the bell end bent in the opposite direction; if we are not mistaken, this has also sometimes been known as "krumm-horn," in consequence of its bent ends. Another special shape is seen in the Cor Anglais, with the tube expanded into a round bulb close to the open end.

It is an interesting point in connexion with musical instruments that their precise make, shape, and finish seems to have been much due, in all times, to a certain instinct and acquired faculty rather than to any scientific principle. No one, probably, who was asked to argue out, on scientific principles, the best shape for a resounding body to stretch strings on for a bow instrument, would evolve the form of the violin, nor do we know that any reason has ever been given or can be given for the adoption of the shape gradually worked out by the great Italian violin makers, and followed ever since. They seem to have arrived at it by a combined instinct and experience, and no one has been able to improve upon it, or even to make instruments equal in effect to the old ones. The effect of time in mellowing the material has no doubt much to do with the superior

tone of the old Italian violins; but we may suspect that there is more than this; that there was a kind of acquired instinct among the old makers which could not be defined or handed down. Similarly, a well-known modern pianoforte-maker told us that it was impossible for a modern workman to reproduce the ancient spinet with the same effect, even with the action of an old one before him as a model, or to repair or re-instate the notes that were gone in an old one; that was some sleight of hand or trick of craft in the making which was lost to us. The visitor to the Crystal Palace collection will probably come to the conclusion that the same was the case with some of the very ancient and semi-barbarous instruments of which examples are to be seen. Some of these are very singular in shape and contrivance, evidently evolved from practical experiment in finding out the right shape. There is a reed flute for instance, of ancient Egyptian make, consisting of a long reed and a short one bound together parallel: it is difficult to understand the precise object of this arrangement, but no doubt it answered to some special feature in the popular tune-making of the day. The instruments of barbarous tribes, of which there are a considerable variety in the collection, afford a curious study of idiosyncracy in the shaping and putting together of materials for producing noises of different kinds. A pair of kettle drums from Egypt (date not given) are curiously like models of the modern orchestral instrument under that name; hemispherical metal cups with a skin stretched across them, only quite diminutive—about 6 in. diameter.

As has been often observed, the artistic design and treatment of musical instruments seems to be almost in inverse ratio to their musical value. Early violins of undeveloped form are often richly carved and ornamented, while the perfected manufacture of an Amati or Straduarius has only the beauty arising from its finely-finished curves and the simple and severe ornament of the line of ebony inlay round the margin known as the "purfling." There is in this collection, certainly, one remarkable Straduarius, elaborately inlaid with mother-of-pearl and ebony on the sides, and also round the margin, in place of the usual plain purfling. This is a curiosity, as only about a dozen examples with this kind of inlay are known to exist; it is said to be an early production of the maker, and there is a tradition that it belonged to the royal family of Spain. That is the kind of history one would have expected; it was a show instrument, made for some great personage who thought more of appearances than of musical tone. There can hardly be a doubt that the inlay must be detrimental to the tone, and that the renowned maker knew this, and only produced a few of these over-ornamented instruments to gratify the individual tastes of wealthy patrons. But the violin, in an artistic sense, is something like an oar or a boat; the mere perfecting of its shape for the required object gives it a beauty of its own. This is hardly the case with the wind instruments. The older and more simple instruments, the early clarinet, and the flute *à becq*, a flute played through a mouthpiece at the end, are more pleasing in outline and appearance than the modern wind instruments of the same types, covered with metal keys which facilitate execution, but spoil the simplicity of the form. Some one has had the fancy to reproduce a type of trumpet seen in one of the Pompeian paintings of gladiators—a tube which makes almost a complete circle, mouthpiece at one end and bell at the other, and is strengthened by a kind of tie or stay across the diameter of the circle. It is an admirable object in a picture, but its musical capabilities are probably very restricted. The collection contains several examples of that extinct instrument the serpent, the function of which is now supplied by the double-bassoon (*contra-fagotto*) or the bass-tuba, but which we believe was in occasional use within the memory of living man. Its manufacture must have been rather a delicate operation; it is a wooden tube of thin wood, increasing conically from a bore of about $\frac{3}{8}$ in. at the metal mouthpiece to about $3\frac{1}{2}$ in. or 4 in. wide at the open end; it is 8 ft. in total length, but made in convolutions something like a serpent in movement—whence the name. The peculiar shape, like the bend backward in the bassoon, is merely to reduce it to manageable length, and has no effect on the sound. Of those exhibited at the Palace the tubes are all black, but whether they are of black wood or the surface is coloured is not easy to see when they are under glass. Their tone must have been coarse and rough; and indeed there is a story of Handel, on first hearing the instrument and its name, venting a sarcasm to the effect that "it was not the kind of serpent that tempted Eve, at all events."

The pianoforte is an instrument which gives little lead or suggestion to the designer for its exterior appearance; it has not, like instruments of the violin family, a form arising out of and governed by musical requirements; it is rather a case containing a sound-producing mechanism, and might be of twenty different shapes without the sound being in any way affected. Hence the pianoforte has always been, so to speak, a piece of furniture, and its design has partaken of the good or evil qualities of the furniture taste of the day. There is a square pianoforte here, made by the house of Erard for Napoléon, as a gift to Marie Louise, which is an admirable design in perfect taste; and many of the small square instruments of the early days of Broadwood and Erard are far superior, as regards taste in design, to most of the grands turned out by the same firms in the present day. In fact, it would seem that in these latter days the pianoforte alone has lingered behind the recent improved taste in furniture, and the reason probably is this, that (in this country especially) the great modern development in musical education and knowledge, which led to so many people desiring to have a good pianoforte, occurred in the earlier Victorian days; and the pianofortes being cased according to the furniture taste of that desolate period, this form, with the decanter-stopper legs, became fixed as the accepted form for a pianoforte, and has maintained itself ever since. There is an occasional effort to produce something better; but generally speaking, while the purchaser of other kinds of furniture can find things that are in good taste ready-made and on sale, he can seldom find a good piano with any design about it; and if he cannot afford to have one made to order he must take the conventionally-accepted form which the pianoforte-maker offers him.

The organ also is a case with music-machinery inside it, and may be treated in all kinds of different ways without interfering with its musical effect; but the design of the organ has never sunk so low as that of the pianoforte, because the ranks of pipes, which are the sound-producing medium, have a character and a grandeur of their own, and can be freely used as an element in design, while the pianoforte-strings cannot; there is nothing effective in their appearance, and they would be liable to injury if exposed. There are of course no large organs at the exhibition; one might as well attempt an exhibition of houses as of organs. There are, however, two interesting examples of ancient organs on a small scale. One of these indeed may be rather called an organ cupboard than an organ; this is the Flemish instrument said to have been the property of Elizabeth daughter of Charles I.; as it appears here it is simply a specimen of fine and elaborate carved wood open-work, for no indication of an organ appears. The other is the very pretty little instrument, with a front of small pipes, a German example of the seventeenth century, and called in the catalogue—wrongly we think—a "Positive." In the language of older organ-building days in Germany a "Positif" was an organ which was built into its place, as distinguished from a "Portatif," which could be carried about. This little instrument is self-contained and not too large to be moved about, and we should say that it was properly a "Portatif." The original meaning of "Positif" is illustrated by the meaning which it came to have in the days of large organ-building in Germany. In most of the great organs of the seventeenth and eighteenth centuries the pipes belonging to the lighter portion of the organ, represented by the lower row of keys—what is called in England the "choir organ"—were built separately, for decorative reasons, as a small organ in front of the main edifice. As this small or "choir" organ was about the size of the built-organs, the "Positifs," of earlier days, it got to be called the "Positif," and the word is used in German organ-music to this day. Thus, while the "Positif" originally meant the largest kind of organ, it came ultimately to mean the smaller or light part of the organ; and we may take it that the "Positif" of the late period represented an instrument of the same size and type as the original "Positif," when the word signified the largest organ made; otherwise the expression would not have been used. But these "Positifs" could never have been moved about; they were built organs, only on a small scale.

The keyboard instrument department includes two small examples of modern organs of special type; a "Hope-Jones" organ, the peculiar system of which is well known, and a "Caslon" organ, which, as we learn from a pamphlet that has been sent to us, is an organ contrived to combine in a very small instrument a variety of effects which generally require separate stops and keyboards to realise them; *e.g.* a 16 ft. stop on the manual of which only the lowest key that is struck sounds, thus supplying a pedal bass without the pedal keyboard, and a "melodic stop" in which only the highest note of the chord struck is sounded. One object of this is to meet the cry which is being raised by architects and others for smaller organs. We have not much sympathy with this; but there are cases, as in a small chapel, where only a very small organ is possible, and the Caslon organ seems worth attention for such cases. The specimen at the Crystal Palace, however, was not available for hearing, and we should prefer to hear one before expressing any decided opinion as to its value.

MAGAZINES AND REVIEWS.

The *Quarterly* has a forcible article on "The Ethics of Cremation," one point of which is to argue that the general adoption of cremation would be a serious danger to the community in destroying all traces of foul play in the case of poisoning, and thereby opening a door of safety to the poisoner. This argument has been brought forward before, and we think, here as elsewhere, is somewhat exaggerated. In regard to the hygiene question, the article reasserts Seymour Haden's views as to the advantages of what he called the "earth-to-earth" system of burial, and the argument on this aspect of the subject is forcibly put. There is one hygienic consideration in regard to cremation which is not mentioned here, and which we have rarely if ever seen alluded to in any polemical writing on the subject, but which is surely a very important one: viz., suppose cremation universally established by law, what is to be the effect of the immense amount of burning of bodies which will take place in crowded districts, and of the escape of all the products of the combustion of bodies into the air? We hardly think the advocates of cremation have realised this. The same number of the *Quarterly* contains an article on "A British School in Rome," in support of the proposal to establish such an institution. It is pointed out that in Italy, and above all in Rome, "classical, mediæval, and modern interests are indissolubly united, frequently in the same building or on the same site; while the materials for study are as rich for the historian and artist as for the archæologist."

The *Architectural Review* (Boston) devotes its illustration plates entirely to a house "on" (as they say in America) Locust-street, Philadelphia, by Messrs. Frank Miles Day & Brother. The house is worth this special illustration, however; it has a fine and rather unusual plan, and the interior detail, founded on Elizabethan and Jacobean types, is very well considered. "The Characteristic Architecture of the Nineteenth Century" is the subject of a long article by Mr. J. R. Coolidge, Junr., with a number of small illustrations from photographs of modern buildings. The English buildings included among the illustrations are St. George's Hall, the Reform Club, and Mr. Webb's Grain Silo at Greenwich; rather a curious selection, ignoring entirely the English Gothic revival.

The most interesting subject illustrated in the *Berliner Architekturwelt* is "Moderne Luster-fayencen"; at least, the illustrations under this head show really pretty and artistic design, which cannot be said of anything else in the number.

In the *Art Journal* Mr. S. Fisher concludes his article on "The History of a Tower"—the Jewel tower at Westminster. The title of another article, "An Illustrator of Blake," at once attracts attention, seeing that we had been accustomed to regard Blake as his own illustrator. However, Miss Celia Levetus, the illustrator in question, appears to be only work-

ing where Blake has not worked. The larger illustrations reproduced, though very charming in themselves, are hardly in the spirit of Blake, but the small drawing of "The Little Boy Found" might have been done by Blake himself, as far as feeling goes. If there are more like this, Miss Levetus is doing a good work.

The *Studio* (July 16) publishes a rhapsody on Rodin's collection of curiosities in the pavilion outside the Paris Exhibition. No words in the vocabulary of modern so-called criticism seem sufficiently exuberant to characterise this collection of half-finished and contorted sketches, in which genius contends with waywardness and eccentricity. When M. Rodin produced the "Age d'Airain" he was, or was on the way to be, a great sculptor, and we may recall that we recognised the remarkable character of that work, exhibited at the Academy many years ago, when it was passed over by other critics as far as we noticed. But the collection of works in the gallery at Paris, with the ghoul-like Balzac thing in the centre, suggests the words of Lear—"Oh! that way madness lies." A short article on the subject of "The Royal Academy and Architecture" suggests, quite truly, that the Academy does not give to architecture the attention which is rightly its due; but any weight such a protest might have had is discounted by the weak selection of drawings for comment and illustration, which consist only of things of minor interest, picturesque sketches of small houses, &c.

The *Engineering Magazine* includes articles on "Electricity in the British Collieries" and on "Commercial Organisation of the Machine-shop." This latter is a very practical and sensible article. Among the suggestions made we may quote the following:—

"If the factory occupies several floors it will be decidedly an economy to have, so far as possible, all supplies needed on any one floor in a storeroom on that floor. I have in mind a factory where the elevator was kept going all day long carrying goods to, and distributing material from, the storeroom, which was on the top floor. Every workman who needed material was compelled to go up the elevator, and if he wanted 2 in. of steel, he was given a long bar, which he took down to the first floor, and after cutting off his 2 in., he had to take the remainder of the bar up to the top floor again. At the same time, this concern was spending liberal amounts for the purchase of modern machine tools."

Feilden's Magazine contains an article on "Stone-working Machinery" by Mr. M. Powis Bale.

The *Antiquary* contains an article on "St. Katharine in Art, Legend, and Ritual," by Mr. J. Lewis André; and a note on "A French Type of Bronze Axe" found at Hull in 1884, and which passed into the possession of Mr. T. Sheppard, who writes the communication. The axe-head, as figured, is of peculiar character, but we are not sure that the argument that it is of French origin is quite made out.

The *Genealogical Magazine* includes an illustration of the arms of Cape Town, and an article on "Unheraldic Charges," illustrated by the arms of some eminent men of science—Herschell, Sir W. Crookes, as well as others; although we observe that the writer of the article rather opposes the argument that "charges" illustrating some achievement or invention are unheraldic, maintaining that on the contrary "they are very much in the spirit of true heraldry, which, in the wording of ancient grants, seeks to perpetuate the memory of worthy deeds." This appears to be an attempt to import common sense into heraldry; and the writer (Mr. Fox-Davies) observes that "however unheraldic a charge may appear by reason of its modernity, in the generations to come it attaches to itself a certain honour as a hereditary commemoration of the peculiar reason which led to its original choice." In fact, it appears that "unheraldic" only means novel, and Mr. Fox-Davies argues that what is modern now will be ancient some day. We will go so far, however, in opposition to "unheraldic" charges, that we think heraldic charges should be symbolical rather than realistic. In this respect the Crookes shield, figured in the article, is quite heraldic; those of Herschell and Vavasseur, bearing more or less realistic representations, respectively, of a telescope and a cannon with a shield, are hardly heraldic; they are too pictorial. The motto of the Vavasseur shield, which bears this gun and two bombshells with flames proceeding from them, is rather amusing in its incongruity—"Tout par faveur Divine."

The *Fortnightly Review* contains an article by Mr. Arthur Symons on "The Art of Watts,"—writing which is meant to be eloquent, but which is to our apprehension over-wrought and exaggerated in style and expression, and rather of the nature of rhapsody than of true criticism. Mr. Symons seems rather to aim at being a second Ruskin, making fine writing about art, more for the sake of the fine writing than for criticism in the true sense.

Scribner contains an article on "Loches," by Mr. Ernest C. Peixotto, with the author's illustrations, which, neither large nor numerous, are very good as far as they go. Under the heading, "The Field of Art," Mr. La Farge contributes some remarks as to "The American Academy at Rome." He thinks there is a special chance for the Americans to get the best advantages from such an institution while escaping its disadvantages, because Americans are not, like the art students of other nations, fettered by any associations of a past art history; in which there may be truth.

The *Pall Mall Magazine* contains an interesting and picturesque article by Mr. Wedmore on the country of Constable, under the title "With Constable"; the description of a walk through the country where Constable most lived and painted. The article is written with special reference to Lucas's set of mezzotint prints of Constable's landscapes.

The *English Illustrated Magazine* contains a popular article on "Pompeii Up to Date" by Mr. Frederick Dolman, which is well done and appears to be the result of personal observation.

The *Gentleman's Magazine* contains an interesting article on "Village Life in Mediæval Arcadia," an attempt to sketch the conditions of life in a mediæval village.

The *Essex Review* (quarterly) contains an article on "Old Chelmsford and Some of its Surroundings," with some illustrations, and also a notice of "A Relic of Richard II. at Pleshey," in the shape of an inscribed stone, of which an illustration is given. It bears the words *Ricardus Rex ij.* in fourteenth century lettering, and is now built into a garden wall at Pleshey, near the spot where it was dug up. For the suggestion as to its real meaning and history we must refer the reader to the *Essex Review*.

Knowledge continues Mr. Davison's article on "The Indian Earthquake of 1897;" and an article by Mr. de Tunzelmann, under the general heading "Wireless Telegraphy," gives some "mechanical representations of electric action."

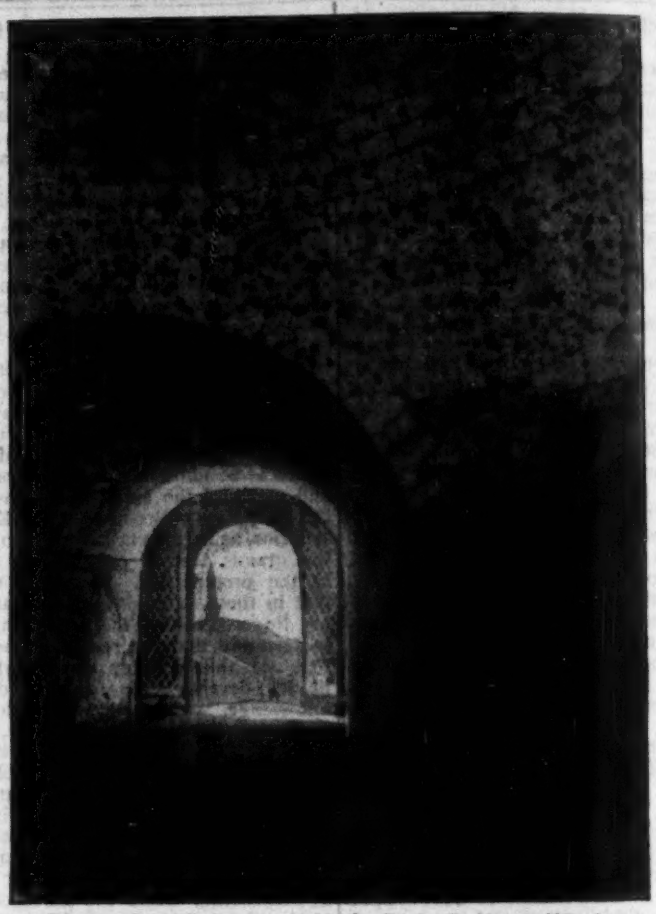


Fig. 1.—Domed Apartment in the Porta Giuliana, Nicosia.

The *Quarry* contains an article on a proposed scheme for water supply for Reigate and Redhill, under the title "Upward Boring for Water," the system being to bore in the lower portion of the hill near Reigate so as to procure by direct gravitation the water in the upper chalk stratum. A section of the ground is given. The article is of considerable interest.

We have received also the *Revue Générale* and *Harper's Magazine*, which this month contain nothing for comment on our part.

FURTHER ILLUSTRATIONS OF NICOSIA, CYPRUS.

In our issue of July 21 we published the plan, by Mr. G. Jeffery, of the ancient Venetian fortification of Nicosia, Cyprus. We give here some photographic illustrations of some of the remains in their actual state. Their position will be seen on referring to Mr. Jeffery's plan in our issue of July 21.

Fig. 1 shows the interior of the domed apartment in the outer portion of the Porta Giuliana, looking towards the city. Fig. 2 shows the actual state of the inner face of this gate, masked, as noticed in our article, by a Turkish aqueduct; a restored elevation of it was given on page 48 *ante*. Fig 3 is the Caraffa Bastion adjoining the Porta Giuliana. Fig. 4 shows the Porta del Proveditore, on the opposite side of the town.

We are indebted for the photographs to Mr. Jeffery, who has placed all his illustrations and plans of the two Venetian fortresses freely at our disposal, with the sole object of creating a public interest in these two ancient monuments of Venetian work in Cyprus.

COMPETITIONS.

Hospital, West Hartlepool.—In the competition for the Cameron Memorial Accident and General Hospital, West Hartlepool, the first premium has been awarded to Messrs. H. W. Pye and R. F. Bacon, 1, Verulam-buildings, Gray's-inn, W.C., and they have been appointed to carry out the work. The assessor was Mr. Gordon Smith, architect to the Local Government Board.

Public Hall, Tullibody, Clackmannanshire.—It is proposed to erect a public hall, library, &c., at Tullibody. The cost is estimated at over 1,400*l*. Mr. Geo. A. Kerr, of Alloa, is the architect.

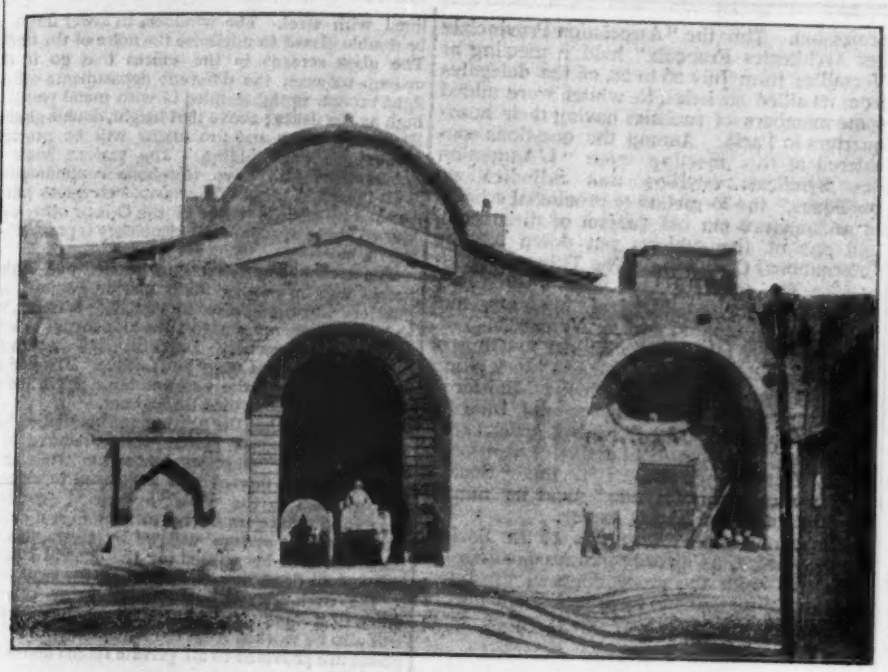


Fig. 2.—Porta Giuliana, Nicosia, in its present state.

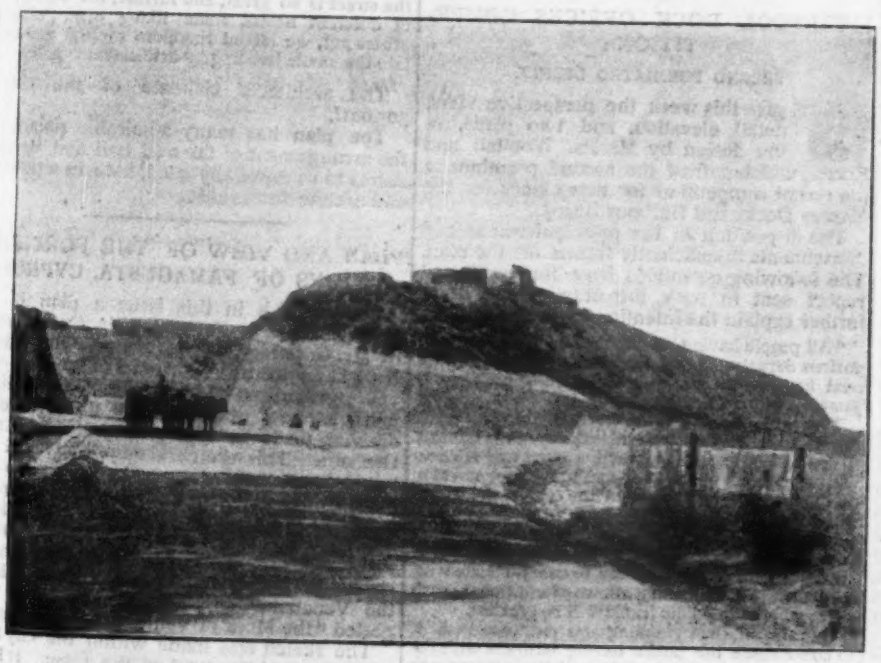


Fig. 3.—Caraffa Bastion, adjoining the Porta Giuliana.

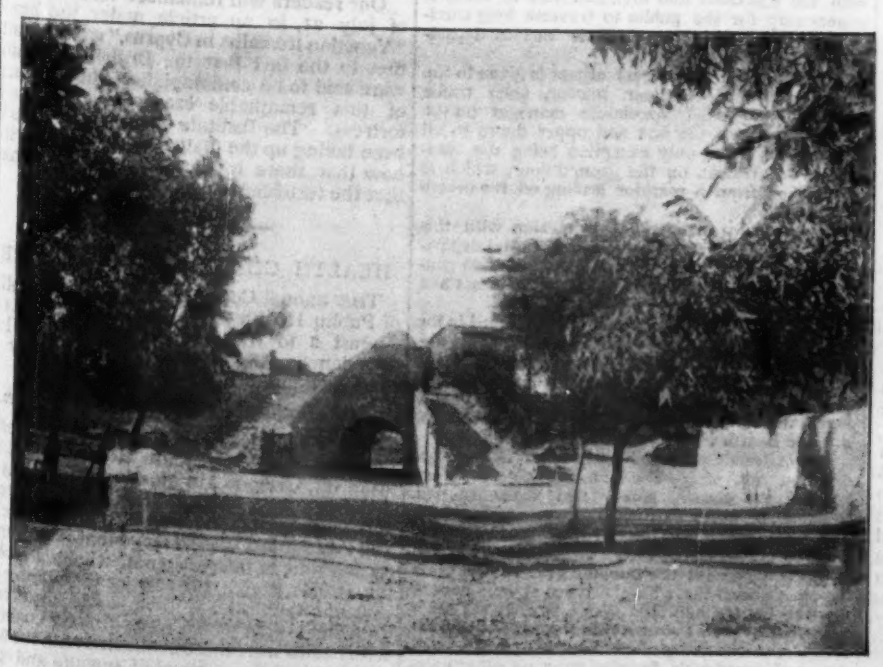


Fig. 4.—Porta del Provveditore, Nicosia.

PARIS INTERNATIONAL CONGRESS OF ARCHITECTS.

THE Fifth International Congress of Architects was opened at Paris on July 30, at 10 a.m., in the theatre of the Ecole des Beaux-Arts, under the presidency of M. Alfred Normand, supported by MM. Blondel, Ch. Lucas, and Courtois-Suffit as vice-presidents, M. Poupinel as general secretary, M. Bartaumiaux as treasurer, and M. Trélat as senior member of the Committee of Organisation.

The first proceedings were the distribution of the badge of the Congress—a compass and a flower interlaced on a silver and enamel ground; the welcome of the visitors by the President; the reading by the Secretary of the report of proceedings of the Committee and its adoption by the meeting, and the formal constitution of the "Bureau du Congrès."

The meeting being thus officially constituted, short speeches in reply to the President's welcome were made by MM. Suzor and Stübben, of Cologne; Dr. Cuypers, of Amsterdam; M. Dumortier, of Brussels; Professor Baldwin Brown, representing the Institute of British Architects; and Señor Vergas, of Madrid.

An interesting exhibition of architectural drawings had been arranged in the museum of casts and in the vestibule of the theatre, mostly French, but including some foreign drawings also. These represented the work of eminent architects from 1726 to the present day.

The afternoon meeting of the same day was devoted to the discussion and finally to the adoption of a resolution in regard to the question of property or copyright in architectural designs ("Proprieté artistique des œuvres d'architecture"), moved by M. M. G. Harmand, *avocat* in the Paris Law Courts, and seconded by M. Chas: Lucas. It would be best to give the resolution in the original language, so as to give the exact detail of the wording:—

"S'inspirant des vœux émis par le premier Congrès International de la Propriété Artistique tenu à Paris en 1878, par les trois derniers Congrès Internationaux des Architects tenus à Paris, 1878 et 1889, et à Bruxelles, 1897, et par les divers Congrès de l'Association Littéraire Artistique Internationale, tenus à Madrid, 1887; Neuchatel, 1891; Milan, 1892; Barcelone, 1893; Anvers, 1894; Dresde, 1895; Berne, 1896; Monaco, 1897; Turin, 1898, et Paris, 1900; lesquels tendent à accorder aux œuvres d'architecture la même protection qu'aux œuvres de peinture, de sculpture et des autres arts du dessin:

"Considérant que les dessins d'Architecture, comprenant les plans, coupes, élévations, détails des façades extérieures et intérieures, détails décoratifs et autres en général, constituent l'original de l'œuvre de l'Architecte, et que l'édifice construit n'en est que la reproduction:

"Considérant que l'œuvre d'Architecture, comme celle de peinture et de sculpture, a droit à la protection de la loi, quelque soit l'auteur, quel que soit son mérite, lorsqu'elle présente des caractères d'originalité, qui lui constituent une individualité:

Renouvelle le vœu que, dans toutes les législations et dans toutes les conventions internationales, les Architectes jouissent, pour leurs œuvres, de tous les droits de propriété artistique reconnus aux peintres, aux sculpteurs, et aux autres artistes: Regrette que l'acte de Paris de 1896, n'ait pu, en raison de la législation de deux des pays (l'Allemagne et la Grande Bretagne) adhérents à la Convention de Berne, accorder aux architectes une protection complète et uniforme, dans toute l'étendu de l'Union: Et souhaite que cette protection soit complétement réalisée dans la prochaine révision de la Convention de Berne."

To this resolution was added another, moved by M. Maukels, of Brussels, to the effect that the delegates were recommended to use every effort, in their respective countries, to bring this principle into practical operation, and more especially to press it on the Government authorities of each country.

This well-filled business day was terminated by a soirée at the new railway hotel of the Gare d'Orléans, to which ladies were invited, and which ended in a dance.

Tuesday, July 31, was reserved for an excursion to Chantilly, under the direction of M. Daumet, the architect tor the new buildings and the restoration.

On Wednesday, August 1, the morning and afternoon meetings were devoted to the question of architectural education, on which subject papers were read by M. Pillet, of Paris; Professor Otzen, of Berlin (who has sent us an English translation of his paper); and by Mr. Frank Fuller, of Chicago; and communications were read from MM. Chaine and Benouville, of Paris; M. A. Gosset, of Rheims;

and M. G. Sterian, of Bucharest. After some discussion, a resolution, moved by M. Lucas, was carried, to the effect that "the Congress is of opinion that in every country the higher study of architecture ("Hautes Etudes d'Architecture") should receive the greatest possible development." The expression "Hautes Etudes" is rather vague, but we are reminded that the late M. César Daly read a paper, or rather delivered a lecture, at the Congress of 1889, to the same effect, and making use of the same expression. It is easy to see generally what is intended, but the resolution does not present anything very tangible to go upon in trying to influence the Education Department of a Government.

Following this meeting was a visit to the new Sorbonne, under the guidance of its architect, M. Nénot.

At the morning meeting on Thursday, August 2, a communication was read from M. Bohnstedt, of Berlin, on the subject of preservation of the monuments of past times, and followed by some suggestions on the same subject from Baron de Geymüller, of Baden. After an eloquent speech from Dr. Cuypers, and some contributions to the discussion of the subject by other members present, the Congress formally ratified the views previously expressed on this subject at the Congress of Paris in 1889 and of Brussels in 1897, especially in regard to the desirability of having a complete inventory of existing remains and of securing a uniform legislation in regard to their protection. Subsequently the Congress listened to a learned paper by M. Bissuel, President of the Société Académique d'Architecture of Lyons, on the subject of "Le Titre d'Architecte," followed by another on the same subject by M. Couran; after which a resolution was carried to the following effect:—

"That all Governments should take measures to protect and render respected the title of architect, in reserving it in the future for those who could present a *brevet* of capacity, and interdicting its use by others."

Mr. W. J. Locke (Secretary of the Institute of British Architects) communicated an interesting *resumé* of the work of the Architectural Congress held in London in June under the auspices of the Institute; after which the subject of "Habitations à bon marché" was successively treated by MM. Lucas (Paris), Lecœur (Rouen), Locke (London), Maukels (Brussels), Morsier (Geneva) and others, the subject being considered both from the point of view of construction and hygiene, and in regard also to the advisability of large blocks of tenements or of smaller separate dwellings. A subsequent visit to the "Palais des Illusions" in the centre of the great Exhibition proved very attractive, and M. Hénard, the architect, received the congratulations of the members on his portion of the Paris Exhibition work.

On Friday, August 3, a paper was read by M. Pillet, in the name of Mr. Jenney, of Chicago, and Mr. Totten, of New York, on the subject of "L'Ossature Métallique des Constructions à Etages," and on the varied architectural treatment of this class of structures in Chicago and New York; to which some observations were added by Mr. H. L. Florence and Professor Baldwin Brown. A paper was also read on "Les Fondations en Sol Comprimé," by M. Dulac.

In the afternoon, at the usual distribution of "Récompenses" of the Société Centrale, M. Lucien Etienne read a memoir on the life and work of M. Paul Sédille.

The closing meeting on Saturday morning, August 4, held in the Palais des Congrès, within the Exhibition enclosure, was preceded by a meeting for the consideration of International questions; and before separating the Congress had decided, on the application of the delegates from Spain, that the sixth International Congress should be held at Madrid, Seville, or Grenada, in the spring of 1903.

At the Hôtel Continental, on Saturday evening, a dinner was given by the Société Centrale to 200 members of and visitors to the Congress, when the principal toasts were successively proposed by the President, M. Normand, and by the delegates from Amsterdam, St. Petersburg, Cologne, New York, London, Madrid, &c.; the Congress being thus wound up in a manner alike harmonious and International.

Several minor architectural meetings have been held in Paris, either more or less connected with the Congress, or taking the opportunity to secure an extra attendance of the profession. Thus the "Association Provinciale des Architectes Français" held a meeting at Versailles from July 26 to 28, of the delegates from its allied societies, to whom were added some members of societies having their headquarters in Paris. Among the questions considered at this meeting were "L'Admission des Syndicats ouvriers aux adjudications publiques," the formation of provincial schools of architecture (an old subject of discussion), and one of the subjects put down for the International Congress—"The Title of Architect." The meeting also gave awards in a competition of architectural students, and visited the palace and park of Versailles.

On Sunday, July 29, the annual meeting of the "Caisse de Défense Mutuelle" took place, followed by a dinner at which the Minister of the Department of Commerce and Industry was present, the "Caisse" having special relations with that department of the Government.

On Wednesday, August 1, the "Société d'Assistance Confraternelle" held its annual meeting, preceded by a déjeuner.

The usual annual meetings of the Société Centrale were, as already indicated, so closely connected with the proceedings of the International Congress as to form practically part of the same programme.

Illustrations.

LIVERPOOL DOCK OFFICES COMPETITION:

SECOND PREMIATED DESIGN.

We give this week the perspective view, detail elevation, and two plans, of the design by Messrs. Woolfall and Eccles, which gained the second premium in the recent competition for new offices for the Mersey Docks and Harbour Board.

The disposition of the principal rooms and departments is sufficiently shown on the plan. The following quotations from the architects' report sent in with the drawings serve to further explain the intention of the design:—

"All people having business transactions with the various departments on all floors enter into a large oval hall, which has its approaches both from James-street and Brunswick-street.

The oval hall, above referred to, we propose to make one of the architectural features of the interior design, using in its construction stone and faience, with marble columns to support the gallery corridor on the two upper floors. In the centre, the hall is widened out in an elliptical form, in which, on one side, are very wide and handsome double staircases; on the opposite side, five passenger elevators, arranged with different speeds, to communicate with all floors. This widening allows of additional crush space where the public traffic will be greatest.

Our aim in thus planning this entrance is, first, to concentrate the public having business with the various departments; to bring all the entrances to these various departments in close communication with the staircases and lifts, and also to make it unnecessary for the public to traverse long corridors in order to arrive at their various departments.

It will be seen that direct access is given to the rates and dues, harbour master, chief traffic manager, and chief warehouse manager on the ground-floor; on the first and upper floors to all departments; the only exception being the treasurer's department on the ground floor, which is approached from a corridor leading off the centre of this hall.

We have also arranged in connexion with this hall a public telephone call office and postal department, which, we feel sure, would be a great convenience to many having business to transact and wishing to communicate with their offices.

An entrance to the building is also arranged in the centre of the south front under the tower; to distinguish it from the public entrance we call it the 'Official Entrance,' and suggest that it be for the use of the heads of the various departments, female clerks, deputations, and persons having business with the Board. . . . .

The materials proposed to be used in the construction are, viz.:—For the outside elevations fronting the streets, stone from Cefn, Talacre, Bridgend, or other hard-wearing stone; the inside elevations, Aston Hall bricks; the roofs slated; the floors throughout of fireproof construction, covered with wood blocks; the public corridors and landings, mosaic and tiles; the staircases, stone. Joiners' work to ground and first floors, hardwood; other floors, pine. The construction throughout will be steel stanchions and girders to carry all floors, safes, &c., and cased with fire-clay slabs or other uninflammable material. The roof will be of steel filled in with breeze concrete, with slating bedded and nailed to same. The strong rooms will be of two thicknesses of fire bricks with air spaces between, ventilated and lined with steel. The windows in lower floors to be double glazed to minimise the noise of the traffic. The glass screens in the offices that go to the ceilings between the different departments will be light bronze uprights, filled in with metal panels as high as the desks; above that height, double glazing. Electric lighting and fire mains will be provided throughout the building. The various heads of departments will have telephone communication with their assistants. The various elevators will be worked by electric power of the Otis or other well-known kind; space for the machinery is provided on top of building.

The board-room, committee-rooms, and dining-rooms will be finished with marble columns and pilasters having hardwood panelling between, and to be of handsome design; the upper part of walls covered with frescoes. The principal staircases and corridors will be of stone and faience. The sanitary fittings will be of the best and latest type, and the water-closet blocks tiled throughout.

We propose that the heating and ventilation be on the Baird-Thompson system, which, reduced to its primary parts, comprises inlets for fresh air at different points filtered and moistened in summer and warmed in the winter by passing over steam pipes, and thence conducted to the different outlets. The warming system will be by steam, and the basement will be utilised for the control cocks to the various departments, and under the supervision of the engineer, without having to go into the different rooms. The fresh air admission valves will also be worked from the basement floor. Fireplaces are provided to all private rooms and shown on plans.

We find it would be next to impossible to have the windows to open, as the noise of the traffic in the street is so great, and further, the clerks being of different habits, some liking open windows others not, we intend therefore to heat and ventilate the whole building by artificial means."

The architects' estimate of the cost is 305,661*l.*

The plan has many admirable points, and the arrangement of the oval hall and staircases seems to us especially good, both in a practical and architectural sense.

PLAN AND VIEW OF THE FORTIFICATIONS OF FAMAGUSTA, CYPRUS.

We publish in this issue a plan of the Venetian town of Famagusta in Cyprus, made by Mr. G. Jeffery, who also made the plan of Nicosia published in our issue of July 21.

We give also a view of a part of the fortifications, as now existing, from a water-colour drawing made on the spot by Mr. Alexander Graham. This sketch shows the citadel and the inside of the curtain wall; Famagusta Bay lies beyond. The nearest tower, with a panel bearing the Lion of St. Mark, was the residence of the Venetian governor. Tradition has it that it was occupied for some time late in the sixteenth century by one "Cristoforo Moro the Venetian," whose name may have suggested "the Moor of Venice" to Shakespeare.

The sketch was made within the city from the parapet of the wall of the fosse. It looks in a westerly direction across the bay.

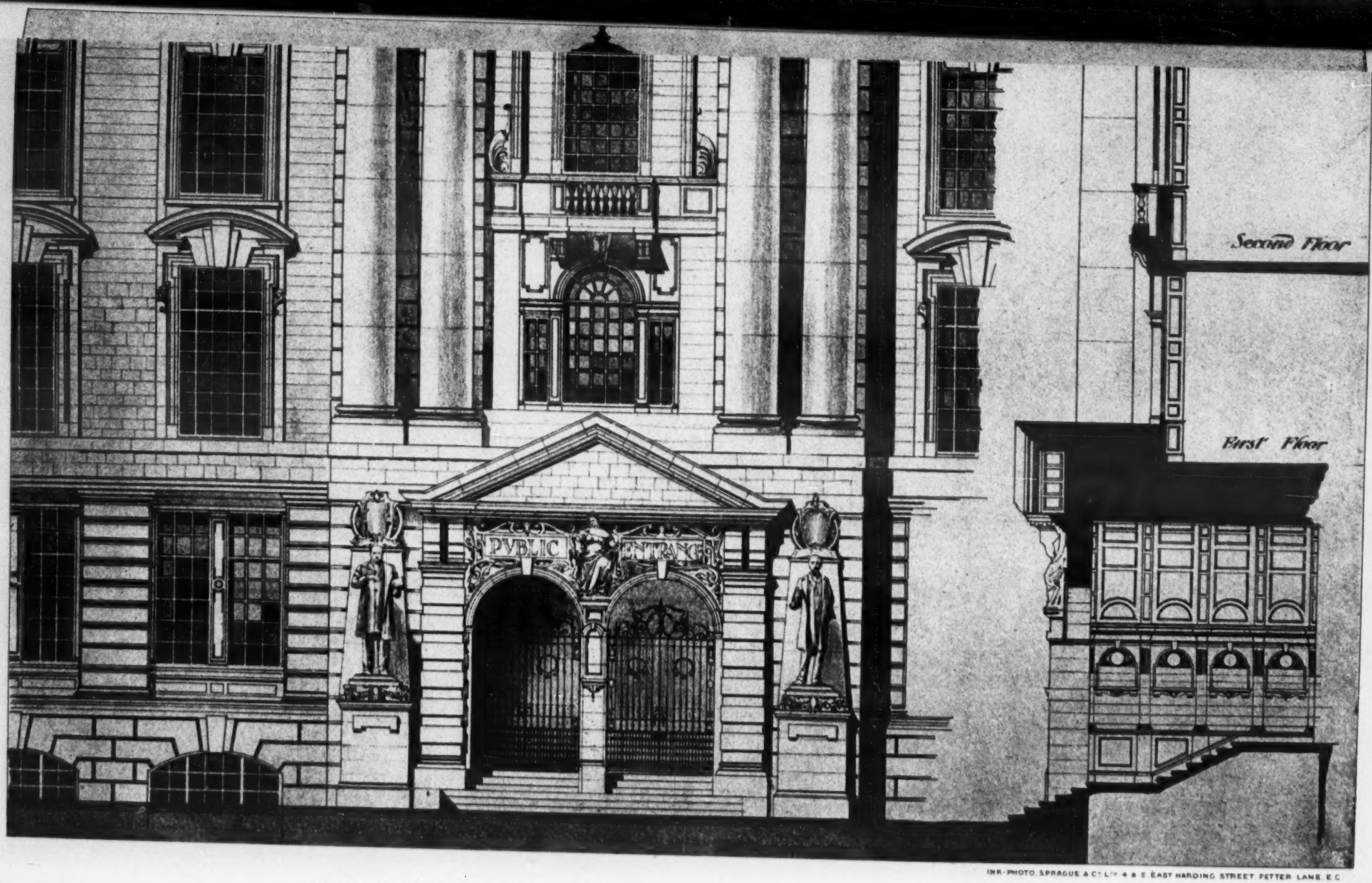
Our readers will remember that in our issue of July 21, in an article under the heading "Venetian Remains in Cyprus," we drew attention to the fact that the British Government were said to be contemplating the destruction of this remarkable example of an ancient fortress. The Institute of Architects have also been taking up the matter, and it is understood now that there is at all events some chance that the fortifications will be preserved.

HEALTH CONGRESS AT ABERDEEN.

The annual Congress of the Royal Institute of Public Health took place at Aberdeen from August 2 to August 7. There was a large attendance of delegates from sanitary and municipal authorities.

Architectural and Engineering Section.

In the Architecture and Engineering Section the President, Mr. John Honeyman, R.S.A., architect, Glasgow, in his opening address said that they were only to deal with architecture and engineering so far as they affected health, and this subject was so large that it was ample for the time at their disposal. He then spoke of the strides which the science of building construction had made. With regard to engineering, the chief works which were directly connected with health were those connected with the water supplies and the disposal of sewage and refuse of cities. Dealing with the construction of dwelling-houses he said that a point which was very much overlooked was the necessity of



INK-PHOTO. SPRAGUE & Co. LTD. 4 & 5 EAST HARDING STREET FETTER LANE E.C.

LIVERPOOL DOCK OFFICES: SECOND PREMIATED DESIGN.—By Messrs. Woolfall & Eccles.

DETAIL ELEVATION.

DETAIL OF PUBLIC ENTRANCE TO MANN ISLAND

SCALE

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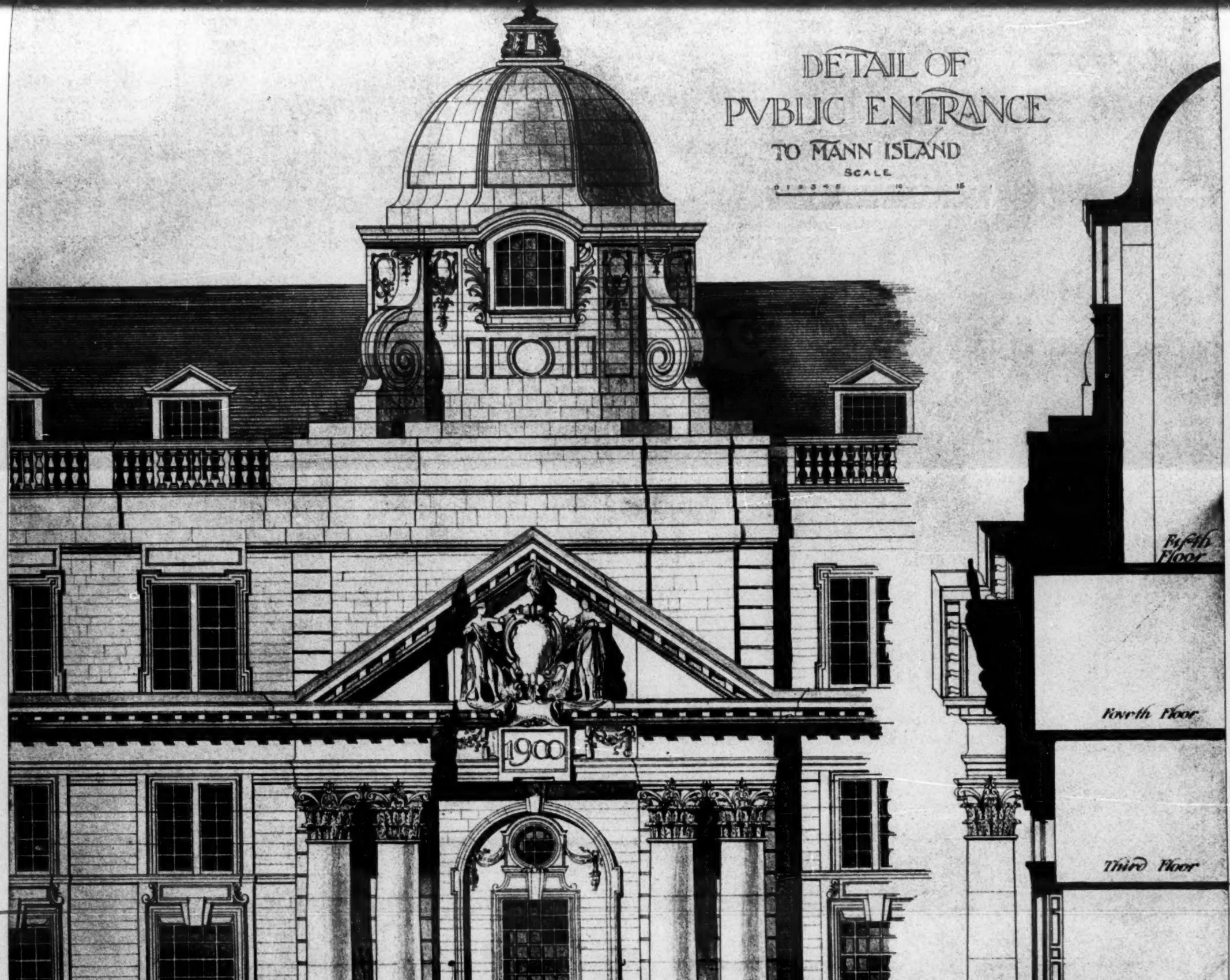

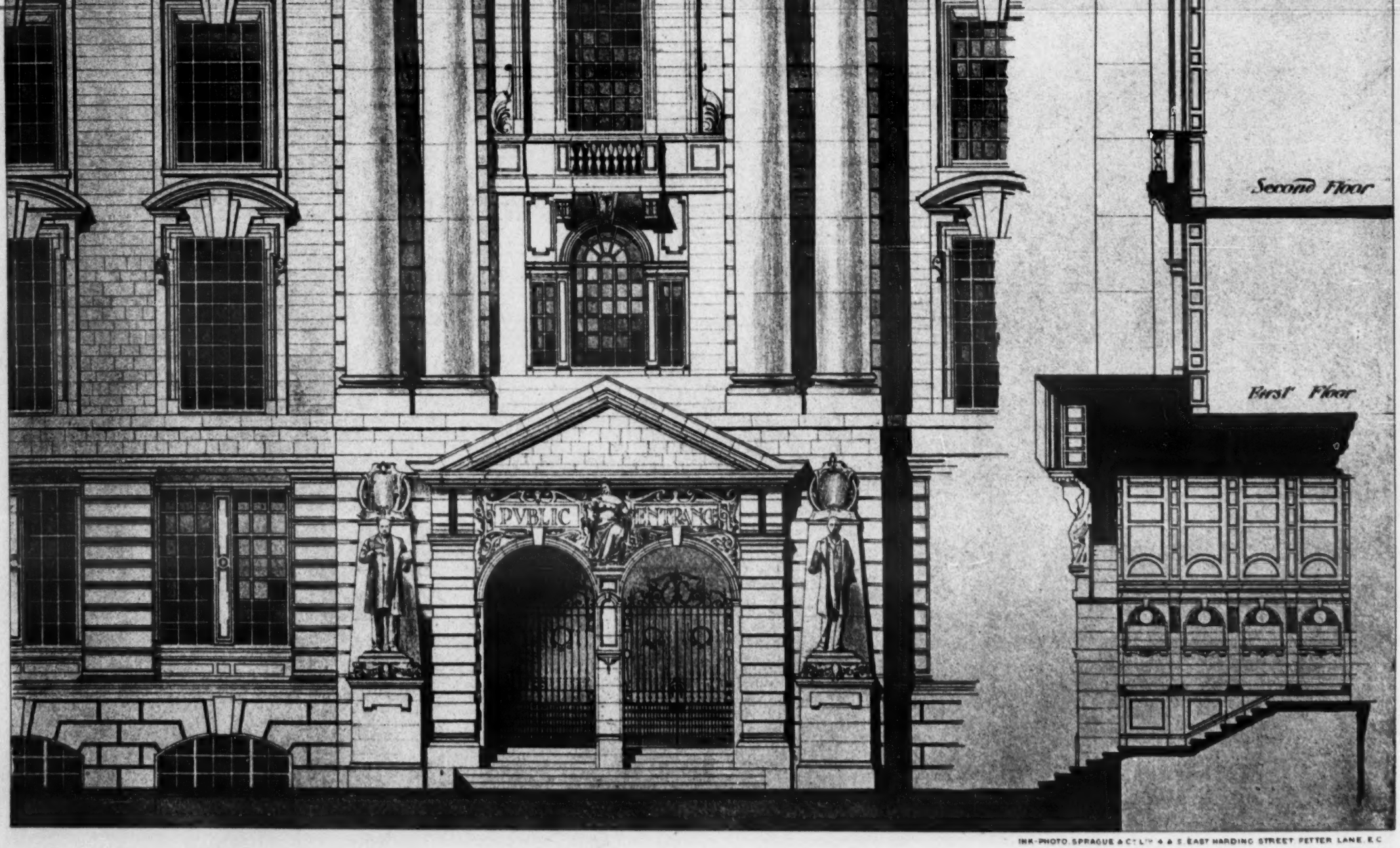

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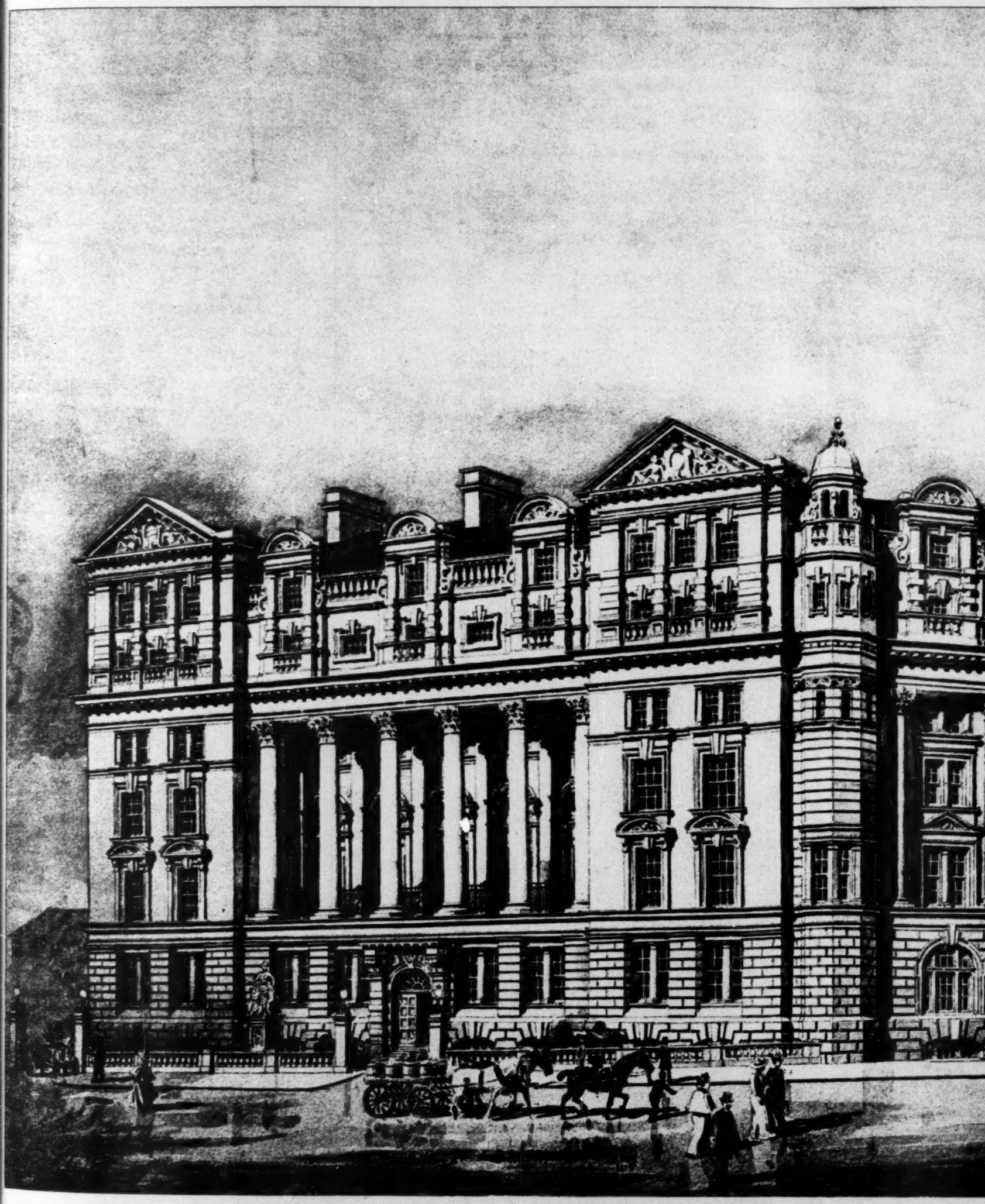
LIVERPOOL DOCK OFFICES: SECOND PREMIATED DESIGN.—By Messrs. Woolfall & Eccles.

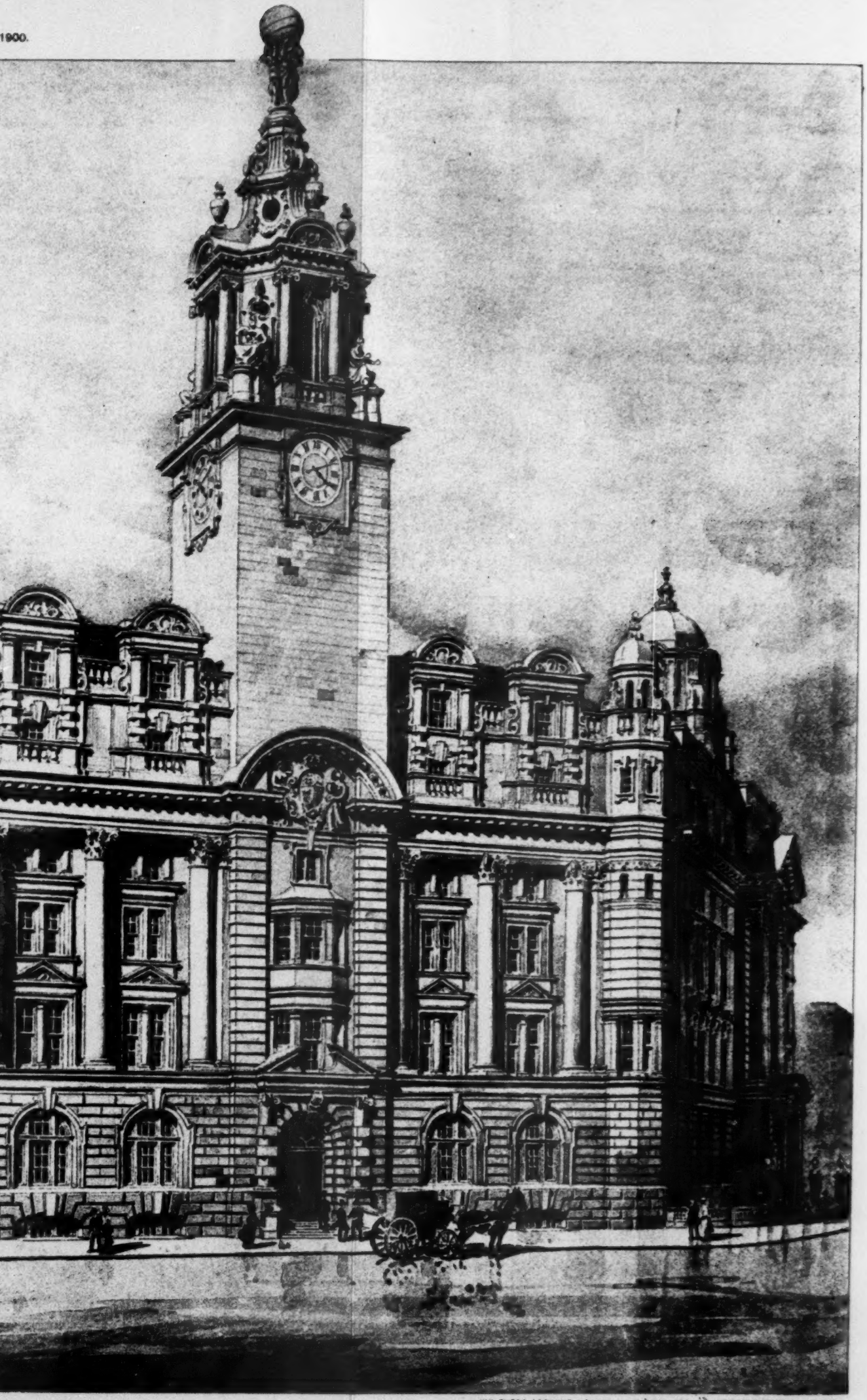
DETAIL ELEVATION.



LIVERPOOL DOCK OFFICES: SECOND PREMIATED DESIGN.—By Mr

PERSPECTIVE VIEW.

1900.



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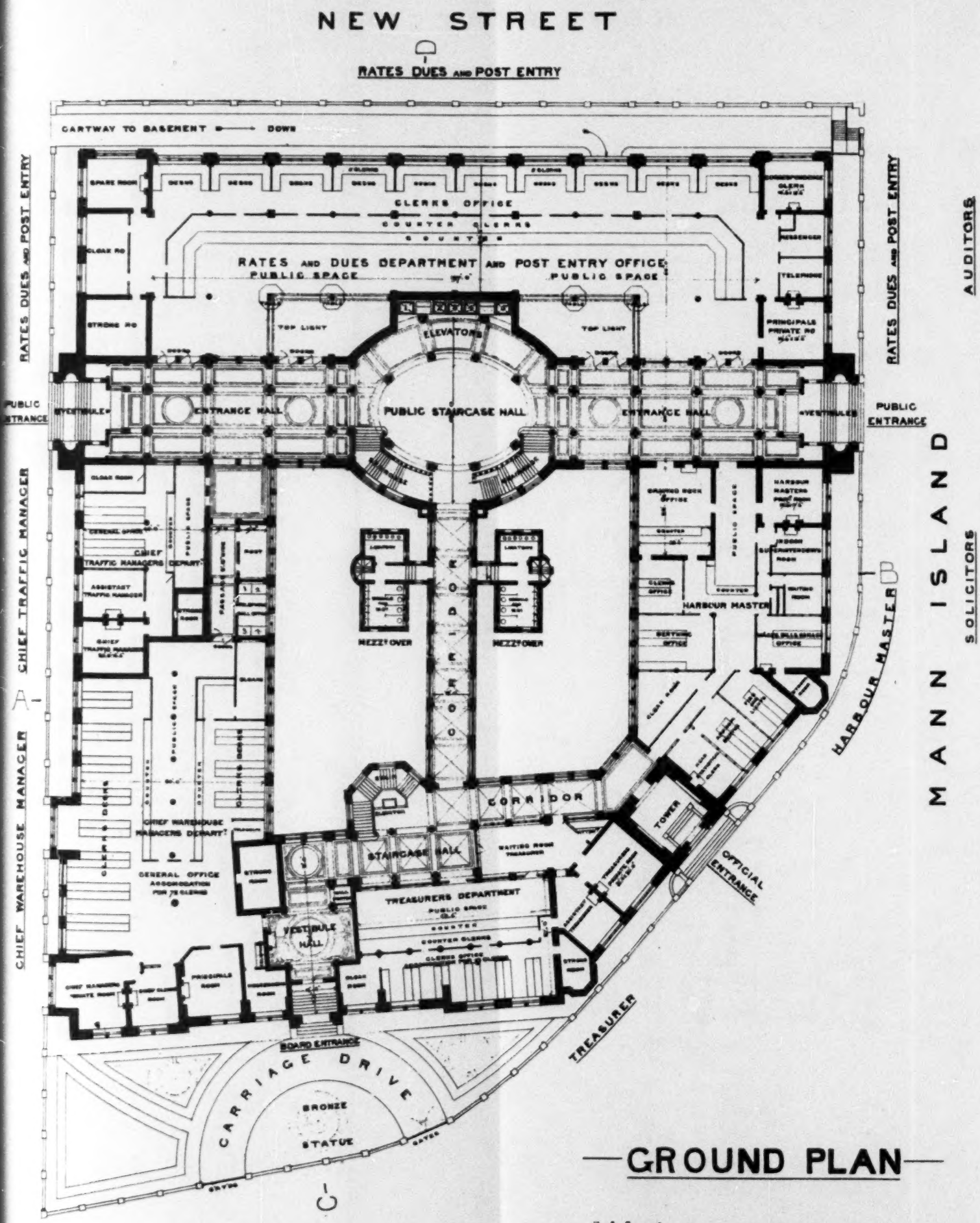
GN.—By Messrs. Woolfall & Eccles.



—GROUND PLAN—

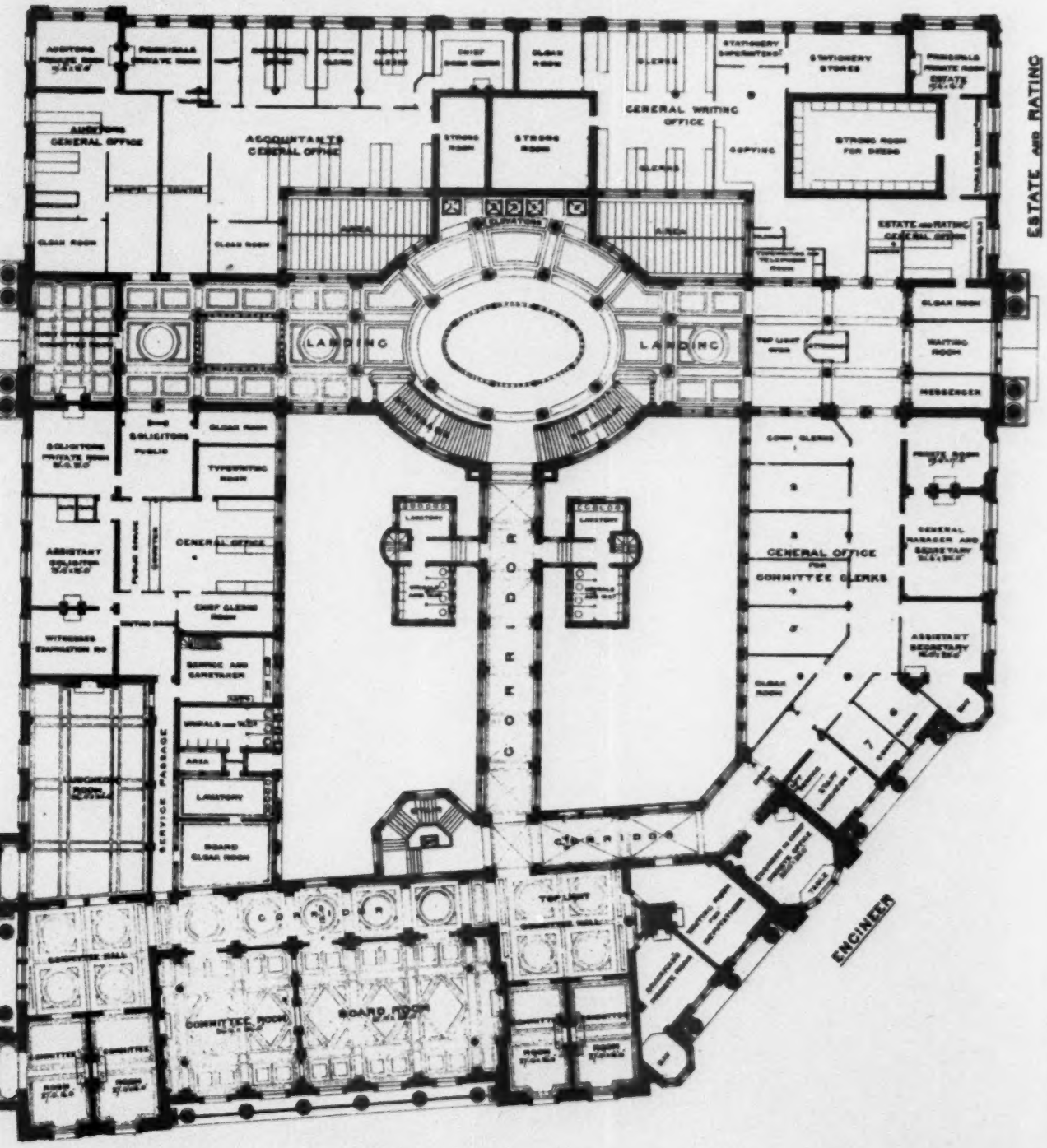
SCALE FEET

LIVERPOOL DOCK OFFICES: SECOND PREMIATED DESIGN.—By Mes

PLANS.

ACCOUNTANTS

GENERAL MANAGER AND SECRETARY



BOARD ROOM &c

ESTATE AND RATING

GENERAL MANAGER AND SECRETARY

FIRST FLOOR PLAN

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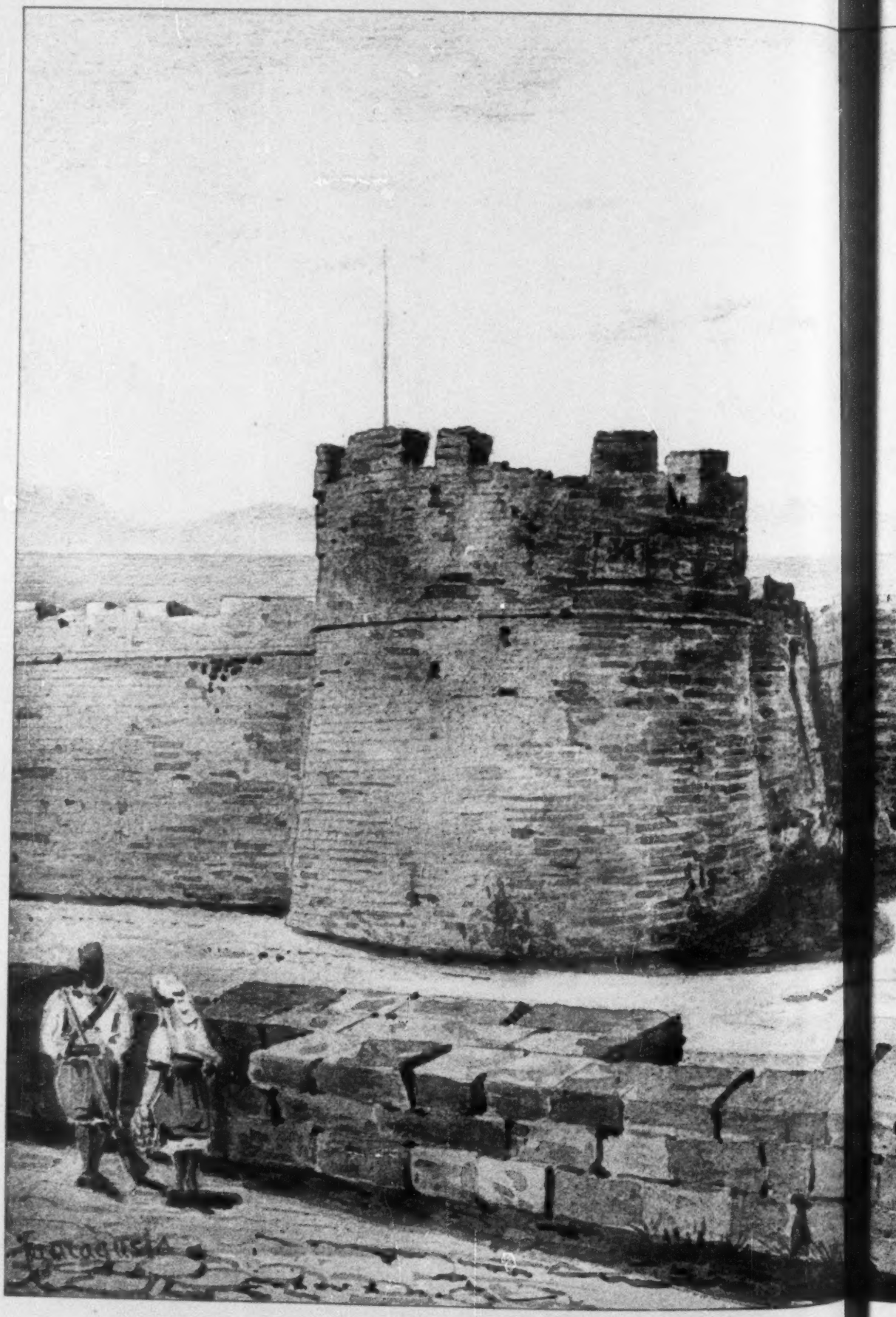
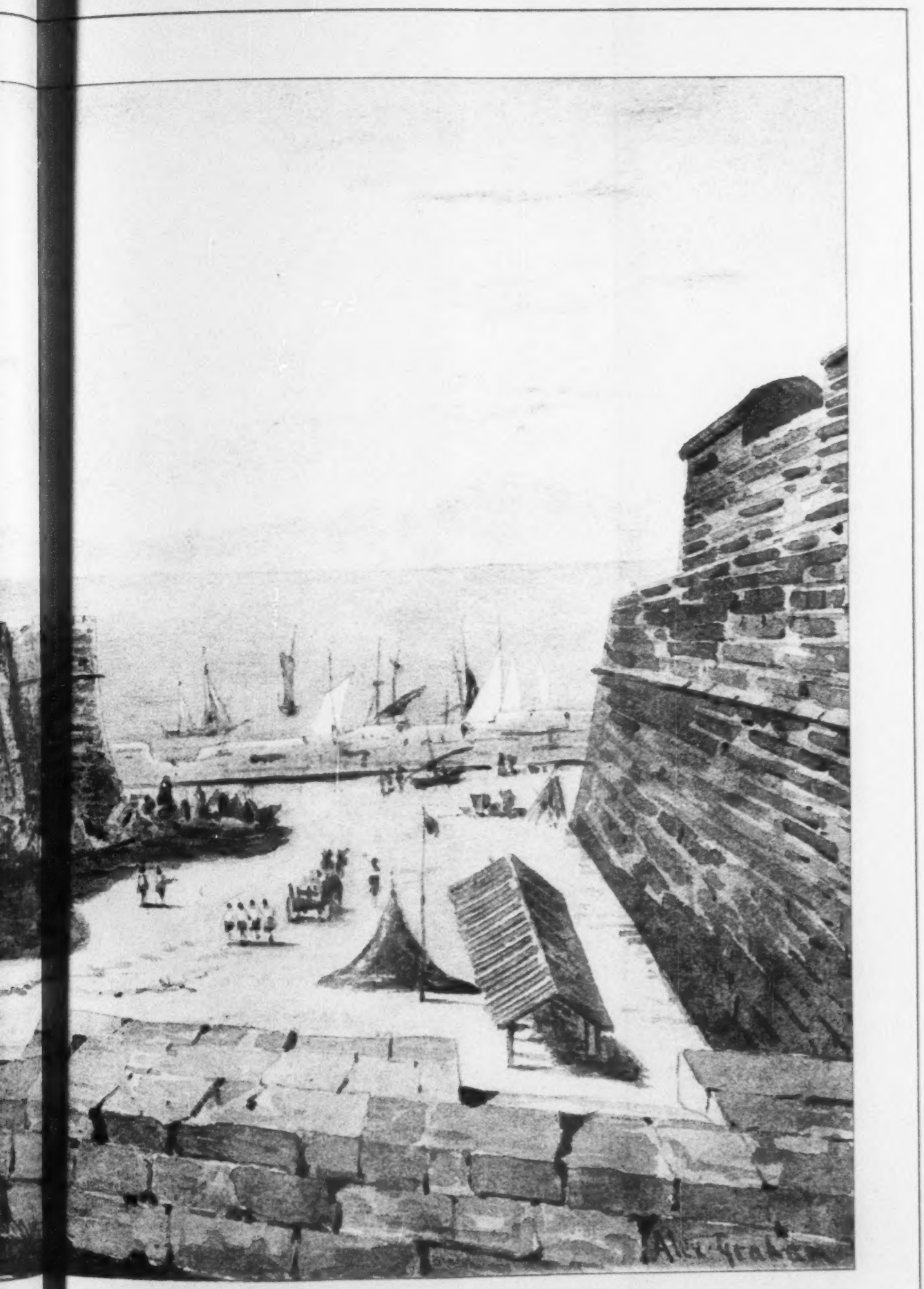
N.—By Messrs. Woolfall & Eccles.



THE CITADEL, FAMAGUSTA, CYPRUS.—FROM A WAT[illegible]LOUR



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M A WA LOUR SKETCH BY MR. ALEXANDER GRAHAM, F.R.I.B.A

proper ventilation. The importance of this subject was becoming more and more apparent. He had no doubt that this subject would receive increased attention in the future. The dwelling-houses now being built were in many respects perfect so far as being water-tight, beautiful, &c., were concerned, but as compared with the ancient structures of our forefathers they were deficient in one important thing, viz., airiness. A crofter's house which he used to visit was one of the most perfectly ventilated houses he had seen, this being due to the fact that the walls of the house were built dry and the air was diffused into the house in well-regulated quantities. The only other house which he could remember as having been so well ventilated was that of Lord Kelvin. In this case the ventilation was devised by Professor James Thomson, Lord Kelvin's brother. The principle on which the ventilation was carried out was that air should be admitted in abundance, so as amply to supply all the rooms and in such a way as to cause no discomfort. The method of applying this was that air was admitted into the central part of the house and conveyed into the various rooms by means of openings at the top of the doors. The openings were fitted with shutters, which served to direct the air towards the ceiling. The idea of this was that as the air went on its course it lost its velocity and gained in heat. A large number of the houses built at the present day were built by speculative builders, and they were only constructed so that they should look well and hold together until they were sold. Mr. Honeyman then spoke of the importance of the question of dwelling houses for the poor in large cities. The reason for the large death rate amongst the poor in certain cities was incomprehensible, unless one understood the nature of the dwelling-houses in which the poor lived. There was a lack of cheap houses for the poor to live in. The President concluded his address by referring to the buildings in Aberdeen. He thought that when they looked at some of the stately buildings in Aberdeen, they would congratulate the citizens of the Granite City that they had still amongst them worthy successors of the Gibbs, the Simpsons, and of the Smiths of bygone days.

Architecture and Hygiene.

Mr. James Souttar, F.R.I.B.A., architect, Aberdeen, then read a paper on "Architecture and Hygiene." In the course of his paper Mr. Souttar indicated some of the ways in which architecture affected the health of our cities. He dealt with his subject under two heads—architecture applied to the hygiene of the house, and architecture applied to the hygiene of the city. Dealing with the first head, he said that frequently in the erection of a house there was no choice of soil, but if there were architectural skill it might be possible to build a healthy house in the mud of the Adriatic, &c., while without architectural skill it might be possible to build an unhealthy house on a site that had absolutely everything in its favour. Where a choice of site could be got it was, as far as possible, desirable that the site should be of such a nature as to allow sunshine at one time or other during the day to enter the rooms of the house. The subsoil was also a very important consideration, and in nothing more than in dealing with this matter was the skill of the architect more required. The lecturer then dealt with the various details necessary to be taken into account in the construction of a house. Passing on to architecture applied to the hygiene of the city, Mr. Souttar said that a general scheme or plan for the beautifying and the laying out of cities in a manner as conducive to the health of the inhabitants as possible should be in the hands of every council. In such a plan long streets should be broken up by squares, &c., railways should be so constructed as not to require the yielding up of beautiful valleys, and the streets should be laid out in a tasteful and at the same time useful manner.

At the conclusion of the paper, discussion was taken part in by Mr. J. Forbes Robertson, London; Dr. Ogston, New Zealand; Mr. G. W. Lacey, Oswestry; Mr. H. C. Parkinson, Armagh; and the President.

Architecture of the Twentieth Century.

Mr. Banister F. Fletcher, A.R.I.B.A., London, read a paper on "The Architecture of the Twentieth Century." Public health, he said, would be the watchword of the new century, and architecture was public health in its best and broadest sense. Architecture had to deal with the healthy arrangement of buildings, while there was no doubt that living amongst beautiful buildings promoted a healthy condition of mind. How could they expect children brought up in the slums of London to develop into good citizens? Something was being done in the extermination of the slums, but as yet only a beginning had been made. The houses should be constructed so that plentiful sunshine should find its way as far as possible into all quarters of the cities. The appointment of a Minister of Public Health was, he thought, an absolute necessity. Speaking of the architecture of the future, he said the spaces provided by architects at dwelling-houses for the reception of refuse would probably be abolished. In public buildings nothing that could be called mechanical ventilation would be adopted on account of the great expense. In theatres, &c., great improvements would be effected in the provision of pure air. People, on account of the rapid means of travelling, would probably live to a great extent in the country, while factories would be constructed in the country with cottages for the workers.

On the 3rd inst. Mr. R. Morham, City Architect, Edinburgh, read a paper entitled "Suggestions on Fever Hospital Construction," exhibiting a block plan of the hospital now in course of erection for the city of Edinburgh. Town Councillor Cooper, Aberdeen, read a paper on "An Ideal Workman's Cottage." A discussion took place as to the difficulties of providing cheap dwellings for workmen. A paper on the design and testing of house drainage, considered in relation to each other, was given by Mr. Gilbert Thomson, C.E., Glasgow, and another on the dangers to public health from railway carriages and stations by Mr. E. Durant Cecil, C.E., London, on which subject the Section recommended the Congress to communicate with the various railway companies.

The Housing Question.

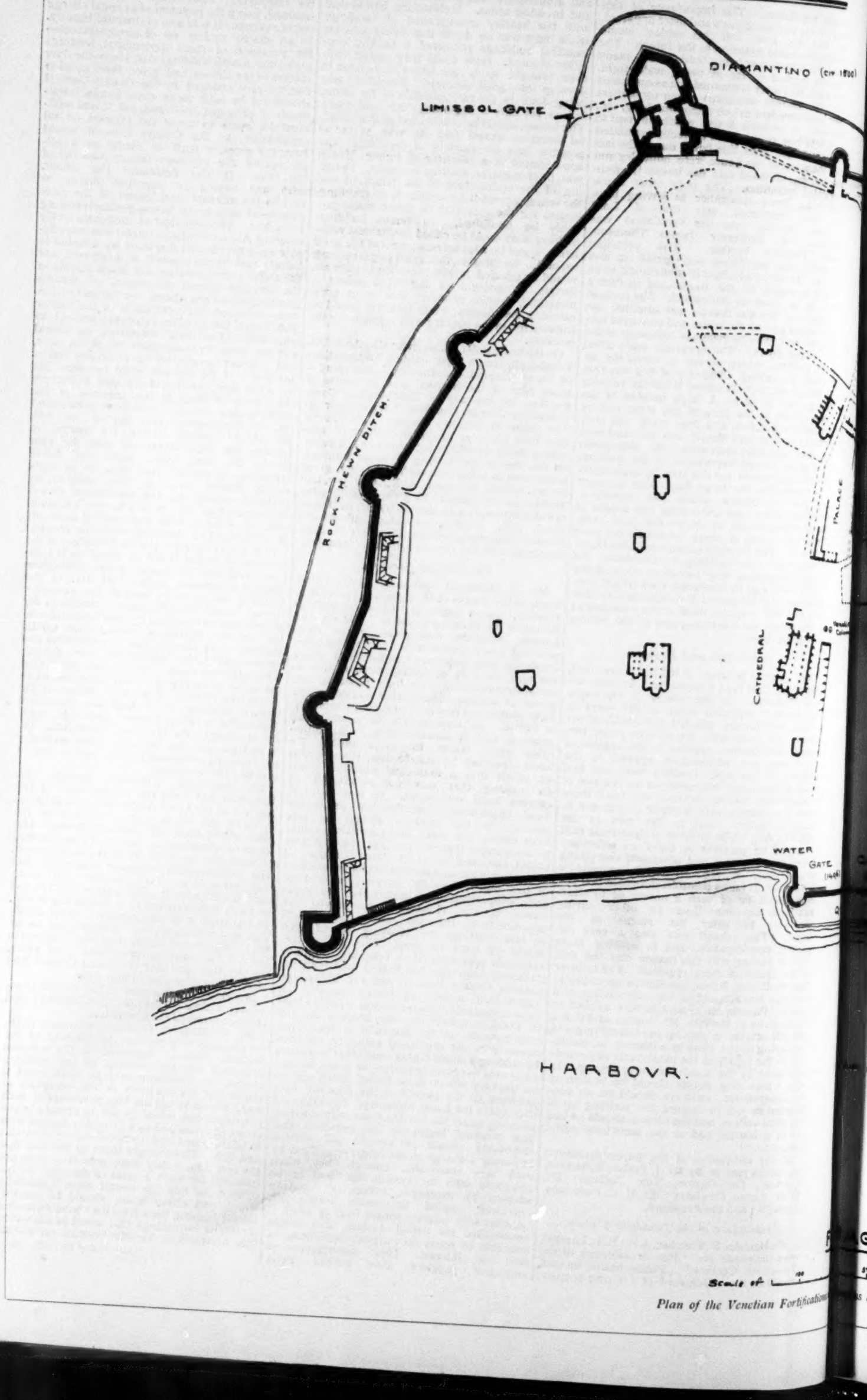
Mr. H. Mansfield Robinson, LL.D., Vestry Clerk of the Parish of St. Leonard, Shoreditch, London, read a paper on "Legal Stumbling-Blocks in the Housing Question." He said the housing problem was probably the most pressing social problem of the day, for overcrowding and improper conditions of living amongst the bulk of British workers was as certainly interfering with their physique and power of resisting disease as it was degrading their morals and power of resisting temptation to crime. In their efforts to combat this growing evil of overcrowding, Local Authorities were bound to move within the limits specified by statute law, since it was an axiom that a municipal authority could do nothing that was not sanctioned by express legal enactment. It was of cardinal importance that the law as to the housing of the workers should be free from doubt, and clear, and calculated rather to encourage than to hamper the laudable object endorsed by every Parliamentarian of providing better accommodation for the workers of this country than the jerry-builder and the slum property-monger had. But the experience of the Housing Acts proved the opposite to be the case; for, as an example of law drafting, the Housing Act of 1890 would be hard to beat. That it was outrageously expensive in its operation might be gathered from the fact that it cost both the London County Council and the Shoreditch Vestry over 20,000*l.* an acre to acquire the most abominably insanitary and squalid slums in London, whilst the shopkeepers got full compensation for the goodwill of their businesses from the municipal authority, and then by bidding a shade higher than other tenderers were able to obtain tenancies of shops erected on the very site of those pulled down, and so get back all the benefit of the goodwill they had sold to the Local Authority. The system of working under the Act was financially unsound. The mischief began in the provision that re-housing should be carried out without imposing a charge on the ratepayer. That by itself was reasonable enough, but when combined with the system that had to be adopted by municipal bodies of repaying borrowed capital by yearly instalments, together with interest spread over 54 years, it necessitated the fixing of rents at a height sufficient to repay such capital instalments as well as interest. This masterpiece of municipal jugglery thus robbed Peter—the toiling tenant—in order to pay Paul—the ratepayer. The system was financially unsound, being the payment of a capital charge out of revenue. It was also of doubtful legality. In an exactly similar set of circumstances—the provision of small agricultural holdings under the Small Holdings Act, 1892—the law officers of the Crown had given their opinion that the rent charged by the County Council should not be such as to cover annual instalments of principal borrowed, but it was sufficient for rents to cover the interest on all expenditure, as the County Council would have the property itself as owner as a set-off against the purchase money paid out of the rates. It also defrauded the tenant, who was paying an improper charge as rent to the ultimate enrichment of the ratepayer—whose property he was gradually freeing from debt. The argument of the tenant freely entering into a voluntary contract was inapplicable since the tenants displaced were bound to be rehoused by the council at a fair rent, and the awful over-crowding and house famine in the east-end offered no chance of tenants choosing rooms elsewhere. So far as London was concerned, the conclusion of the matter was that, if the London ratepayer wanted to own freehold artisans' dwellings, he should pay for them by instalments out of the rates, and a better investment he could not find in London. If he did not want to invest his money in them, he should not seek to become the owner of them at the expense of the working-class tenant, whom he thus swindled out of the scanty earnings of his toil. He should rather enable the tenant to become the legal owner of what he paid for by his rent, either under the Small Dwellings Acquisition Act, 1899, or by some simple scheme, such as that adopted by building societies for the purchase of houses by instalments. At present, London's Council was one of the severest rack-renting landlords in London. Dr. Mansfield Robinson moved: "That this Congress urges the President of the Local Government Board to introduce legislation forthwith to enable Local Authorities executing schemes under Part III. of the Housing Act, 1890, to borrow the necessary money for reconstructing artisan dwellings for all the persons displaced by such schemes, seeing that the charge of raising such capital moneys out of current rates is prohibitive and discourages Local Authorities from dealing with insanitary areas." He also moved: "That the Local Government Board be requested to obtain the opinion of the law officers of the Crown whether it is legal for Municipal Authorities erecting artisans' dwellings under the Housing of the Working Classes Act, 1890, to charge upon the rates the sums necessary for repaying by instalments the capital cost of erecting the dwellings.

Dr. Beveridge, Aberdeen, thought Dr. Robinson had been too critical both of the Act and of the Local Authorities. The proposal to throw the whole cost of erection on the rates would block all housing schemes. The terms of compensation under the Act seemed to be as low as could reasonably be expected. The experience of Aberdeen under the Act was favourable. Two schemes had been carried out under the first part of the Act, and no hitch had occurred from beginning to end. The Council had also erected artisans' dwellings and a Corporation lodging-house under the third part of the Act. The time specified in the Act for repaying capital was thirty years, but by the local Act the Town Council had obtained an extension of that time.

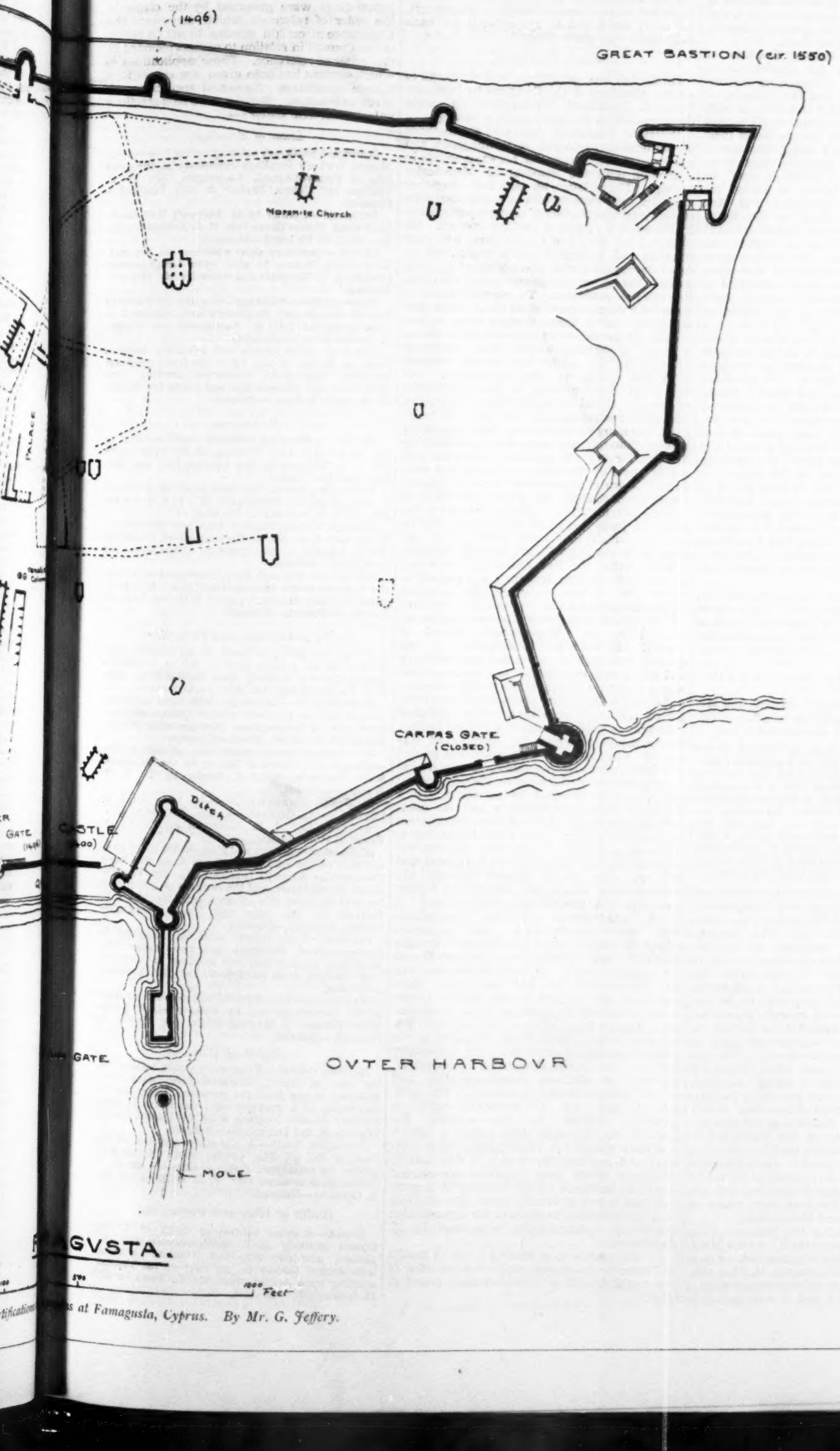
Mr. Hoddart, chairman of the Health Committee, Salford; Alderman Coe, Halifax; and others continued the discussion.

Mr. W. Malcolm Ormiston, architect, Edinburgh, read a paper on the housing of the working classes. Speaking of the schemes promoted for the housing of the working classes, Mr. Ormiston said he often heard it stated that the majority of the occupiers of small houses would not take advantage of such privileges, but would prefer to remain in the crowded areas, and as a class they did not wish to be disturbed and removed out of their dirt and filth. This brought them to the fact that the new houses they were providing were not intended for such a class of tenants. In his opinion for this, the lowest class, a specially strong and cheap house should be erected, simply housing them from the elements, having no timber furnishings that could be converted into firewood or harbour vermin, no plaster

[*Continued on page 134.*



Plan of the Venetian Fortifications



...s at Famagusta, Cyprus. By Mr. G. Jeffery.

that could be broken, with iron-hinged windows and small panes, a good supply of water, water-closets and cleansing arrangements of simple construction, and with a fixed means of direct ventilation, so that fresh air would be freely circulated throughout their dwellings in spite of them, for the majority of this fallen race had sunk beyond recovery, and in this life fresh air was the greatest blessing that could be bestowed upon them.

Mr. Peter Fyfe, Chief Sanitary Inspector of Glasgow, presided over the Conference of Sanitary Inspectors, and delivered an address on "Sanitary Inspectors and the Housing of the Poor." Those who dwelt in towns, he said, were confronted with two great social facts—first, that very many of the people under their charge were ignorant, and dying because of their ignorance; and, secondly, that their poverty was permitted to assist in their destruction. In the city which he served six female inspectors were appointed and sent down into the wretchedness of the thirty thousand whose residences were branded for night inspection for fear of typhus and plague. Poverty was seen in numerous cases to be the cause of black walls and soot-laden cellars, and the inspectors were authorised to pass orders to poor persons securing them grates, as much whitening and colouring powder as were needful, and the loan of a brush, to cover up the dinginess of their apartments. It was difficult now to find in Glasgow a house that could be certified as being a danger to the public health. In all cases the sanitary inspectors of the country should be empowered by Parliament to make an official representation in respect of the unhealthiness of the hovels they were so well acquainted with. Every city and town in any extensive part of which death was reaping yearly thirty per thousand of the population should be compelled by law to take action in that particular. No urban local authority ought to lose money by acquiring ground and building for the labouring classes. A modern and comfortable house, containing 2,000 ft. of free space, with the use of sufficient land for a back green, could be rented to a labourer for 3s. per week.

Mr. Cowderoy, of Kidderminster, moved that the Conference should petition the Government to appoint a Public Health Department, with a Minister of Public Health, having a seat in the Cabinet. The motion was carried unanimously.

In the section devoted to Municipal and Parliamentary Hygiene,

Councillor Dick (Glasgow) moved, and Mr. Boyd (Glasgow) seconded, the adoption of the following motion, which was agreed to :—

"In view of the difficulties experienced in the acquisition of slum areas for the purpose of reconstruction and providing houses for the humbler classes, this Congress resolves that it is expedient that powers be obtained that on the representation of the medical officer of health, the sanitary inspector, the local authority may approach the Secretary of State, who shall remit to an arbiter who shall be named by the sheriff to hold a local inquiry and report to the Secretary of State, and on his approval the powers sought shall be granted."

Professor Hamilton (Aberdeen), President of the Section of Bacteriology and Comparative Pathology, spoke, before that section, on recent developments in bacteriology. This country, he said, had not yet awakened to the tremendous danger of disseminating contagion through dust impurities. It was impossible to say to what extent the spread of influenza, diphtheria, tuberculosis, &c., was to be accounted for by the use of insanitary vehicles of transport. He confessed to a feeling of horror on entering a railway carriage, or school, or place of public resort. He had made observations on dust taken from the floors of two first-class smoking compartments, and the samples had proved to be contaminated by the bacillus of tubercle. Every one with any sense of cleanliness and decency felt that the present state of filth permitted to exist in vehicles of all kinds used in travelling was nothing short of a scandal. He maintained that the flooring of railway carriages should be removable, the cushions detachable, and the carriages so constructed that they could be periodically cleansed and disinfected.

In the Chemical Section two papers on the treatment of sewage were read. In the Municipal and Parliamentary Hygiene Section (presided over by Dr. R. Farquharson, M.P.), a resolution in favour of the national registration of plumbers was adopted, and it was agreed to memorialise the First Lord of the Treasury on the subject. There was also read a paper by Councillor Dunlop, Glasgow, entitled "A Plea for More Air Space In and Around Town Dwellings," and the following resolution was adopted :—"That this Conference approves that the standard of air space for dwellers in cities and large towns be raised to 500 cubic ft. for every adult and to 250 cubic ft. for each child under ten years of age."

Sewage Treatment.

On the 6th inst. an address was delivered to all the members of the Congress by Professor Percy F. Frankland (Birmingham) on recent developments in the purification of sewage.

Professor Frankland described the methods of purification employed at Birmingham, and gave a detailed account of his experiments in connexion with the disposal of Manchester sewage. These latter, he said, had altogether exceeded their expectations as to the possibility of purifying manufacturers' sewage, particularly by the use of a system of multiple contact. He deplored the apathy of Corporations who built libraries and undertook public works, but refused to consider the advisability of clearing away pollution because science could not make the sewage profitable. To expect science to show how money could at all times of the year be made out of town sewage was, in our climate, as unreasonable as to ask her to devise a means of lighting a town with electricity by utilising the waste heat which escaped from the bodies of the inhabitants. All the great developments in the purification of sewage, chemical precipitation, irrigation, intermittent filtration, and the bacterial treatment, including septic solution, were essentially British, although we were deeply indebted to America for the extraordinary diligence with which some of its men of science had conducted a truly monumental series of experiments demonstrating the great possibilities of intermittent filtration. Whilst, therefore, we might be justly proud of the great fertility of resource which had been exhibited in this country in dealing with the sewage problem, it was a matter for humiliation that there was in the whole British Empire no organisation whose duty it was to carry out extended experimental inquiries on sanitary subjects on the scale, and with the thoroughness, adopted by the Massachusetts Board of Health. All scientific investigation in this country was carried on under extraordinary difficulties, and with little or no encouragement of any kind; frequently at the private expense, and even on the private premises of the investigators, in hours or even odd moments, snatched from a life of arduous duties of a routine character by means of which the daily bread was earned. They all knew how much was gained in efficiency through combination, which was the watchword of the hour in the commercial world, and there could be no doubt that a similar increase in efficiency and in unexampled advance would result from combination in scientific inquiry. We were beginning to realise in a number of directions by bitter experience that our methods were too casual, and that we were losing ground through the tenacity with which we adhered to insular traditions and prejudices, which placed us at a disadvantage in the competition with the concentrated and organised efforts of neighbours who displayed greater elasticity and power of adaptation to the kaledioscope of circumstances. In no department of life was this more true than with regard to our position in the world of science, for, high as it was, undoubtedly, the quality of some of the scientific discoveries which were made amongst us in point of quantity of output we were lamentably deficient through the absence of organisation, the lack of adequate encouragement, and of the provision of opportunity. He considered that the Government ought to give to science in this country the position of influence and authority which it already occupied in almost every other civilised land, and that the objects of that section of science which that Congress represented should be furthered by the creation of a great Imperial Board of Health, under the auspices of which scientific inquiries of the highest value should be systematically prosecuted in all directions.

Dr. Farquharson, in moving a vote of thanks to Professor Frankland, supported the idea of the establishment of a Government Board of Health.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the Building Act Committee of the London County Council, held on the 30th ult., being the day before the Council adjourned for the Summer recess, the proceedings were governed by the clause in the order of reference which empowers the Committee at certain seasons to act on behalf of the Council in relation to matters included in the order of reference. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated :—

Lines of Frontage.

Kensington, South.—A building on the forecourt of Messrs. Barker's furniture depository on the south side of Pembroke-road, Kensington (Mr. P. E. Pilditch for Messrs. Barker & Co., Limited).—Consent.

Lewisham.—A porch to St. Andrew's Hall, Sandhurst-road, Hither Green (Mr. P. A. Robson for the Rev. E. C. B. Philpott).—Consent.

Chelsea.—One-story shop additions to No. 490, King's-road, Chelsea, to abut upon Langton-street (Messrs. J. T. Wimperis and Arber for Mr. Hoye).—Refused.

Hammersmith.—Buildings on a site on the south side of Askew-road, Shepherd's-bush, eastward of Ashchurch-road (Mr. S. Newcombe for Messrs. E. Collins & Co.).—Refused.

Lewisham.—Five houses with one-story shops in front, on the site of Nos. 176 to 182 (even numbers) inclusive, High-street, Lewisham, abutting upon Whitburn-road (Messrs. Sills and Leeds for Messrs. W. G. Larke & Sons).—Refused.

Projections.

City of London.—An enlarged oriel window to No. 52, Cornhill, City, fronting on St. Peter's-alley (Mr. T. B. Whinney for the London, City, and Midland Bank).—Consent.

Paddington, South.—An oriel window at No. 18, Connaught-square, Paddington (Mr. F. E. Jones for Mrs. M. L. B. Marshall).—Consent.

St. George, Hanover-square.—Iron and glass shelter to the Bath Club, No. 16, Berkeley-street, Piccadilly (Mr. J. Johnson for the directors of the Bath Club Company).—Refused.

Strand.—An iron and glass illuminated sign over the entrance to the Adelphi Hotel, Nos. 1 to 4, John-street, Adelphi (Messrs. Vaughan & Brown, Limited, for Mr. F. Evans).—Refused.

Lines of Frontage and Projections.

Chelsea.—A porch in place of an existing bay-window on the ground floor at No. 15, Tedworth-square, Chelsea, abutting upon Ralston-street (Mr. F. T. Verity for Mrs. De Bathe).—Consent.

Hammersmith.—Buildings, with oriel windows, upon a site on the west side of Queen-street and south side of Sussex-place, Hammersmith (Mr. A. Blackford for Mr. W. Moss).—Consent.

St. George, Hanover-square.—An addition to the existing porch in front of No. 27, St. George's-road, South Belgravia (Mr. A. E. Taylor for Mr. P. R. Waller).—Consent.

St. George, Hanover-square.—An open porch in front of No. 14, Grosvenor-square, St. George, Hanover-square (Mr. J. M. Anderson for Mr. G. D. Faber, M.P.).—Consent.

Westminster.—An iron and glass shelter to the main entrance of the extension of the Army and Navy Co-operative Society's premises, No. 107, Victoria-street, Westminster, and the erection of a roof over the area on either side of such entrance (Mr. R. D. Falkiner for the Army and Navy Co-operative Society, Limited).—Consent.

Clapham.—Four houses with bay windows in Ravenslea-road, Battersea, and two houses with projecting porches and bay windows in Mayford-road, flanking upon Ravenslea-road (Mr. A. Boon).—Refused.

Marylebone, West.—An iron covered-way in front of the Hermitage, No. 12, Abbey-road, St. John's Wood (Messrs. J. Mitchell & Co. for Mr. R. B. Bentley).—Refused.

Width of Way.

Hackney, Central.—A one-story stable building at the rear of No. 1, Bohemia-place, Mare-street, Hackney, at less than the prescribed distance from the centre of a roadway next the North London Railway (Messrs. Newton & Co. for Messrs. Burch, Whitehead, and Davidsons).—Refused.

Kensington, South.—A five-story addition at the flank of No. 36, The Grove, South Kensington, within the prescribed distance from the centre of Bolton-gardens-mews (Mr. F. E. Williams for Mr. E. Gordon).—Refused.

Width of Way and Projections.

Strand.—A stone balcony in front of a new theatre abutting upon Shaftesbury-avenue, St. James's, and two iron and concrete balconies, with escape ladders at the rear of the theatre, abutting upon Archer-street (Mr. L. Sharp for Mr. H. Lowenfeld).—Consent.

Holborn.—Two blocks of buildings on the east side of Shaftesbury-avenue, abutting also upon Vine-street, with projecting oriel windows, and a portion of the buildings at less than the prescribed distance from the centre of Vine-street (Mr. R. J. Worley for the Shaftesbury-avenue Freehold Land Syndicate).—Consent.

Lines of Frontage and Width of Way.

Deptford.—Buildings on the south side of New Cross-road, Deptford, and west side of Laurie-grove (Mr. C. H. Court).—Consent.

Islington, South.—A block of dwellings on the eastern side of Thornhill-road, Barnsbury, between Offord-road and Barnsbury-park (Messrs. Davis & Emanuel for the East End Dwellings Company, Limited, and Mr. E. Harrison for Mr. D. Weinhausen).—Consent.

Wandsworth.—A two-story addition in front of Highfield, No. 2, St. Nicholas-road, Upper Tooting (Mr. E. J. Munt for the Rev. J. H. Potter).—Consent.

Width of Way and Space at Rear.

Kensington, South.—That the application of Mr. R. Cotton for Mr. J. Robinson, for an extension of the period within which the erection of an addition to stable premises on the eastern side of King-street, Kensington, was required to be commenced, be granted.—Agreed.

City of London.—Fourteen shops, with rooms over, on a portion of the yard on the west side of Ludgate-hill Railway Station, and of a kiosk at the north end of such yard, abutting upon New Bridge-street and Pilgrim-street, City (Mr. W. Wallace for the South-Eastern and Chatham Railway Company).—Refused.

Width of Way and Temporary Buildings.

Battersea.—A temporary wood and iron mission-room at the rear of Nos. 85 and 87, Bridge-road West, Battersea, at less than the prescribed distance from the centre of a narrow roadway leading out of Surrey-lane (Mr. W. Harbrow for Mr. B. W. G. Brown).—Consent.

Width of Way and Height of Building.

Bow and Bromley.—A building, to be used as a bakery, on the east side of Fawe-street, Morris-road, Bromley-by-Bow, to exceed in height the width of the street (Mr. Max Clarke for Spratt's Patent, Limited).—Refused.

Means of Escape from Top of High Buildings.

Westminster (detached).—Means of escape in case of fire proposed to be provided in pursuance of Section 63 of the Act on the upper stories of Park-mansions, abutting on Brompton-road, High-road, Knightsbridge, and Knightsbridge-green, for the persons dwelling or employed therein (Mr. G. D. Martin for Messrs. A. Kellett & Sons, Limited).—Refused.

Uniting of Buildings.

Hampstead.—An opening in the party-wall on the ground floor between Nos. 122 and 124, High-road, Kilburn, without the part used as a dwelling-house being separated from the part used for the purposes of trade and manufacture with fire-resisting materials (Mr. S. Barrett for Mr. I. Alexander).—Refused.

Formation of Streets.

Greenwich.—That an order be issued to Messrs. Farebrother, Ellis, & Co., sanctioning the formation or laying-out of a new street for carriage traffic to lead from Little Heath to Upper Woodland-terrace, Charlton (for Sir S. P. M. Maryon Wilson, Bart.). That the name Kinveachy-gardens be approved for the new street.—Agreed.

Wandsworth.—That an order be issued to Mr. W. Rivett-Carnac, refusing to sanction the formation or laying-out for carriage traffic of new streets to lead out of Gwendolen-avenue and Howard's-lane, Upper Richmond-road, Putney (for Mr. J. Temple Leader).—Agreed.

Cubical Extent.

Lambeth, North.—The conversion of the Lambeth Swimming Bath, Lower Marsh, Lambeth, into a store for wood mouldings and doors, such building exceeding in extent 250,000 but not 450,000 cubic feet (Messrs. J. A. J. Woodward & Sons for Messrs Joseph Sandell & Co., Limited).—Refused.

BOOKS RECEIVED.

ACETYLENE: A HANDBOOK FOR THE STUDENT AND MANUFACTURER.—By Vivian B. Lewes, F.I.C., &c. (Archibald Constable & Co.)

LIFE OF SIR JAMES N. DOUGLASS, F.R.S. By Thomas Williams. (Longmans, Green, & Co.)

FOOTPATHS: THEIR MAINTENANCE, CONSTRUCTION AND COST. By A. Taylor Allen, C.E. (The Sanitary Publishing Company.)

RESTORATION OF BISHOP'S CLEEVE CHURCH, GLOUCESTERSHIRE.—The Church of St. Michael and All Angels, Bishop's Cleeve, was reopened on the 31st ult. after restoration. The work was carried out by Messrs. Collins & Godfrey, of Tewkesbury and Cheltenham, under the superintendence of Messrs. Prothero & Phillott, of Cheltenham.

Correspondence.

To the Editor of THE BUILDER.

ROYAL ARCHITECTURAL MUSEUM.

SIR,—Owing to absence from town I have only now seen Mr. Musto's letter in your issue of July 28.

In the first place, Mr. Musto writes as if he only had to indicate which casts he would have copied for his art class at Leeds, and forthwith copies would be supplied. The Council of this museum has allowed copies to be taken under certain conditions of certain casts where the ornament is not deeply undercut, and in this way a great many copies have been supplied to various institutions at home and abroad, where they have been highly valued. I doubt if ever the Council will permit the casts to be cleaned up and "restored" as Mr. Musto says is so desirable. Half their interest and art value would at once be removed by such a mistaken process. I also believe that in future permission will be given less readily than heretofore for copies of casts and examples to be made, for the good reason that every time a duplicate is made some harm, more or less, is done to the original. As to the arrangement of the examples in the museum which Mr. Musto calls "a deplorable condition of muddle," I would remark that the collection remains exactly as it did when Sir Gilbert Scott and other founders of the collection, at great labour and infinite trouble, had the examples displayed as now seen on the walls. For years it has been the endeavour of the Council to rewire and rehang the specimens, when the walls, of course, would be recoloured. The cost, however, has alone prevented this. When Mr. Musto states that the museum is neglected and uncared for he is asserting that which is manifestly not true. Has he done anything to lend a hand or contribute anything to aid the funds?

The Architectural Association conferred with the Council some few years ago as to any chance of their being able to house the collection in connexion with their studio, but the capabilities of the Architectural Association were not equal to such a task.

We hope that the Royal Institute of British Architects will, by a closer union with the Royal Architectural Museum, be enabled to help forward its development. It will, however, be rather by individual effort, I presume, than by corporate action.

There are so many who, without giving a hand's turn, readily rush into print to find fault. If Mr. Musto and others like him will rise above the easy effort of fault-finding, their substantial assistance will be welcomed.

MAURICE B. ADAMS, Hon. Sec.

HESSETT CHURCH.

SIR,—In your interesting account of the visit of the members of the Architectural Association, during their excursion, to the Church of St. Ethelbert, at Hessett, near Bury-St.-Edmund's, mention is made of a "lace chalice veil" (?) preserved in the sacristy of the church.

This veil is not a chalice veil at all, but a Sindon or Pyx veil, which was used to cover the Pyx, wherein, according to the ancient custom of the English Church, the sacrament was reserved, suspended before the high altar. This was the method of reservation prior to the introduction of a "tabernacle."

The Sindon is a square of drawn flaxwork, bordered with a silken fringe of red and green, now much faded, and gilded balls hang from the four corners. It is, I believe, the only perfect specimen to be seen, though I am told there is a fragment of one in the South Kensington Museum.

It was John *Hoo*, not John Hog, who, with his wife, built the Chantry Chapel at Hessett, and repaired "ye hile,' as recorded by the inscription carved below the parapet.

CYRIL E. POWER.

TENDERING AT FRINTON-ON-SEA.

SIR,—Surely there must be something rotten in the system of tendering, or else the bracing air of this rising place must exert a wonderfully different influence on expectant contractors.

The following extracts from your last week's "Tenders" column are worth re-recording, if not too ludicrous:—

	Pedrette & Co.	Dupont & Co.
Making and sewering Ashlyns-road	£1,923	£520
Making up Third-avenue	4,385	1,832
Slipway	2,054	955*
Approach-road	825	201†
Various sewering and making-up	9,773	4,319‡
	£18,260	£7,827

* Morrin & Son. † Anderson. ‡ Burgoyne.

This shows *highest* £18,260
and *lowest* 7,827

Difference £10,433

This is close tendering with a vengeance!

M. INST. C.E.

*** The results are certainly extraordinary. We branded one of them, on publication, with a (!), but we observe that the discrepancy is even greater in another example.—ED.

The Student's Column.

LESSONS IN ELECTRICAL ENGINEERING.

5. DYNAMOS. MOTORS. MOTOR-GENERATORS. BOOSTERS. DYNAMOTORS.

THE dynamo is the machine that converts the mechanical power of the engine into electrical power. It consists esentially of two parts—the armature which generates the electric currents, and the magnets which produce the necessary magnetic field. This is true, whether we are considering the small magneto-generators used for ringing electric bells, or the large dynamos for traction work, which often weigh more than a hundred tons. If the copper conductors which form the armature do not make a closed circuit, then although there is an electric pressure at the ends of the circuit, that is, at the brushes, yet no current flows, as the resistance of a broken circuit is infinite, and hence the electric power generated, which is the product of the volts and amperes, is zero. In this case the armature can be easily rotated, the only work done being that required to overcome the mechanical friction and the magnetic friction or hysteresis of the iron in the armature core. If, however, the external circuit be closed, then the electric pressure will generate a current, and it will need considerable power to rotate the armature. The larger the current in the armature the greater is the power required to turn it. In practice the electric power we can obtain from a given dynamo is limited, owing to the resistance of the armature and the sparking at the brushes. The former causes excessive heating of the armature coils, and consequent destruction of the insulation when the load is too heavy. The latter is very likely to damage the brushes and the commutator.

The dynamos most commonly used can be divided into three classes:—(1) Series; (2) Shunt; and (3) Compound. In a series dynamo (fig. 1) the field magnet windings are in series with the armature. If the armature of this dynamo be rotated and the switch closed, then the small remanent magnetism always left in iron field magnets will generate an electro motive force (E.M.F.), which will cause a current to flow round the circuit. This current will magnetise the field magnets still more, and the armature now rotating in a stronger field a higher E.M.F. will be generated, and hence the current will be increased. Both the pressure and the current go on increasing until the magnetic field is only strong enough to produce the E.M.F. required for the necessary magnetising current.

Suppose now we put an ammeter in the external circuit to measure the current, and a voltmeter across the terminals of the dynamo to measure the pressure and vary the resistance in the external circuit, the following phenomena are noted. When the resistance is great there is only a very small reading on both the voltmeter and the ammeter. When we diminish the resistance down to what is known as the critical resistance, then the volts and amperes begin to increase rapidly. As we diminish the resistance still farther the amperes go on increasing, but the volts begin to diminish at a very heavy load. If the armature will stand short circuiting without being burnt out, then we should obtain a very large current in the external circuit and practically no pressure. All the electrical power generated would be expended in heating the armature.

Let E be the E.M.F. generated in the armature, r the joint resistance of the armature and field magnet windings, and x the resistance of the external circuit. Then if C be the current generated we have by Ohm's law

$$E = C(r + x) = V + Cr$$

where V is the difference of pressure between the dynamo terminals. We see, then, that the E.M.F. generated can be divided into two parts, one of which (V) is the pressure required for the external circuit; the other (Cr) is the pressure required to drive the current C through the internal resistance of the dynamo. Cr is sometimes referred to as the "lost volts" in the armature.

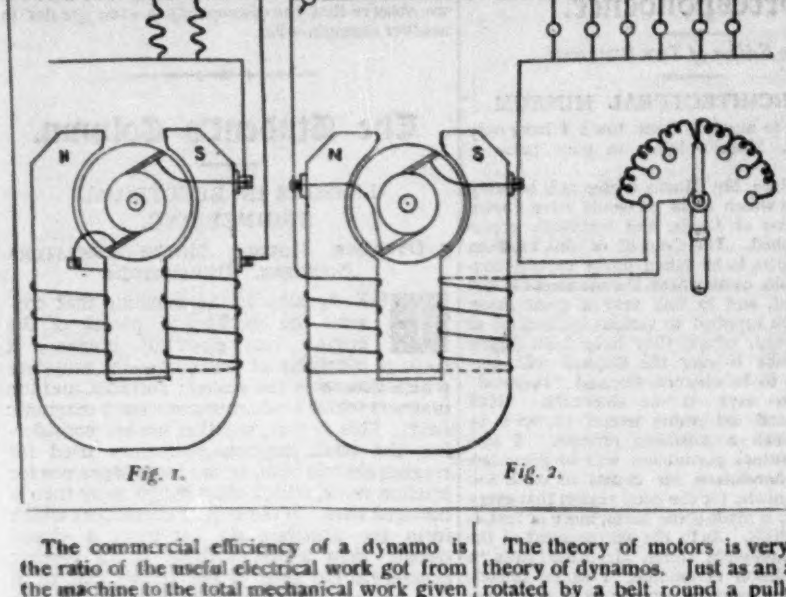


Fig. 1. *Fig. 2.*

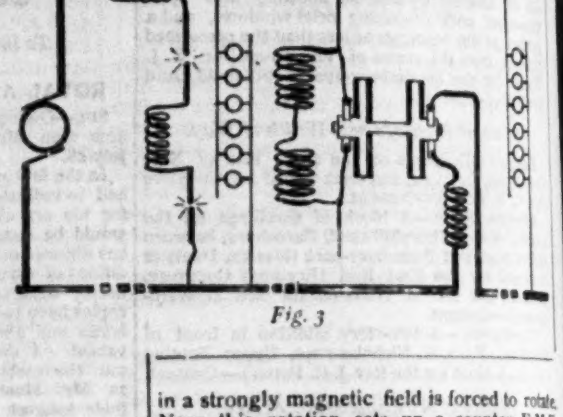


Fig. 3

The commercial efficiency of a dynamo is the ratio of the useful electrical work got from the machine to the total mechanical work given to it. In our notation,

$$\text{efficiency} = \frac{C^2 x}{C^2(r+x)+H}$$

$C^2 x$ being the watts in the external circuit is the useful electrical power. $C^2 r$ is the watts wasted in heating the armature, and H represents the watts required to overcome friction, the resistance of the air, hysteresis and expended in eddy currents. It is easy to see that the larger the external resistence x is, and, consequently the smaller the current, the greater is the efficiency.

Suppose that the readings on the voltmeter and ammeter were each 100, that the internal resistance of the dynamo was 0·1 ohm, and that H was equal to 500 watts. Then the "lost volts" in the dynamo would be $100 \times 0{\cdot}1$, *i.e.*, 10 volts, and hence the total E.M.F. generated would be 110 volts. The total electrical power generated would be 110×100 watts, *i.e.*, 11 kilowatts or 14·7 h.p. Also the external resistance (x) is by Ohm's law, the voltmeter reading divided by the ammeter reading, and hence it is one ohm. Substituting C=100, x=1, r=0·1, and H=500 in the above formula we find that the commercial efficiency is 87 per cent.

The electrical connexions of a shunt dynamo are shown in fig. 2. The main difference between it and a series dynamo is that none of the external current is used to magnetise the field magnets. If we run it at constant speed, then since the armature and the field magnet windings forming a closed circuit, we get the maximum pressure at the terminals when the external circuit is open. If we close the external switch the current leaving the positive pole of the armature has now two paths to get back to the negative pole. Both the external current and the magnetising current pass through the armature. There will thus be more "lost volts" in the armature when the switch is closed, and the pressure at the terminals, and consequently also the magnetising current, will be slightly less. Hence the greater the load on a shunt dynamo the less the pressure at the terminals. To remedy this a resistance (see fig. 2) which can be varied by hand is introduced in the shunt winding. By diminishing this resistance as the load increases, and thus increasing the magnetising current, and consequently the E. M. F. generated, it is easy to keep the volts at the terminals practically constant at all loads.

In a compound dynamo we have a double set of windings on the field magnets. One is a shunt to the armature, and is quite distinct from the external circuit; the other is in series with it. By properly proportioning these windings, it can be arranged that the pressure at the terminals remains nearly constant at all loads.

Series dynamos are mainly used for lighting arc lamps in series. For charging accumulators and for electro-plating shunt dynamos are now almost exclusively used. The main use of compound wound dynamos is for traction work. For electric lighting purposes both compound-wound and shunt machines can be used. For central station work, however, shunt machines are more extensively used.

The theory of motors is very similar to the theory of dynamos. Just as an armature when rotated by a belt round a pulley in a stroug magnetic field generates electrical energy, so when electrical energy is applied to the armature a strong turning force is developed in it which enables it to supply mechanical energy to other machines. Every dynamo can thus act as a motor, and conversely nearly every motor, when suitably driven, can act like a dynamo. The turning force, or torque as it is called, developed in the armature of a motor when a current passes through it is one of the factors which measures the power of the motor. It is measured in foot-pounds. If the armature be not rotating it can be measured by means of a lever attached to the pulley and a spring balance. Suppose that the perpendicular pull on the spring balance is p lbs., and that the distance of the point from which it is attached to the centre of the shaft is q ft., then the starting torque will be $p\,q$ foot-pounds.

If P be the resultant force on the rim of the pulley as it rotates, and r the radius of the pulley which we suppose to make n revolutions per second, then the torque, *i.e.*, the measure of the power of P to rotate the pulley is Pr. The mechanical work done per second is the force on the pulley rim multiplied by the distance through which that force has been overcome in a second, *i.e.*, $P \times 2\pi r \times n = 2\pi n T$ where T is the torque.

Now consider a series motor (fig. 1):—

Let E=the E.M.F. applied to its terminals.
e=the back E.M.F. generated by the armature as it revolves in the magnetic field.
R=the resistance of the armature and field magnet windings.
C=the current through the armature.

By Ohm's law $E - e = C R$ ..... (1)

Also the work done by the current C flowing against the back E M F e is Ce watts, and, remembering that one foot pound per second equals 1·356 watts, we get that

$$2\pi n T \times 1{\cdot}356 = C e$$
$$\therefore \quad n T = 0{\cdot}1174\, C e \ \ldots\ldots\ldots (2)$$

Equations (1) and (2) are well worth studying.

Suppose that we have a series motor whose internal resistance is 0·1 ohm and that it is taking 12 amperes at 100 volts and is making 600 revolutions per minute,

Then by (1) $e = 100 - 12 \times 0{\cdot}1$
$= 98{\cdot}8$

Hence the work done in turning the armature is $12 \times 98{\cdot}8$, *i.e.*, 1,186 watts and

$$10\,T = 0{\cdot}1174 \times 1{,}186$$
$$\therefore T = 13{\cdot}9 \text{ foot pounds.}$$

The back E.M.F. "e" developed in the armature of the motor as it revolves is proportional to the strength of the magnetic field and the speed of the armature, hence $\frac{e}{n}$ is proportional to the strength of the field, and therefore depends only on the magnetising current. In a shunt motor (fig. 2) the magnetising current is constant, and so also to a first approximation is the speed, and hence the torque developed is proportional to the current.

When we switch on the current to a series motor there is a rush of current through the field magnet windings which strongly magnetises the field magnets. This current also passes through the armature, which being in a strongly magnetic field is forced to rotate. Now this rotation sets up a counter E.M.F. which chokes back the current, and the quicker this rotates the less would be the current, provided the magnetic field remained constant. The diminution of the current, however, weakens the field, and *à fortiori* weakens the torque on the armature. When the armature ceases to accelerate and rotates with constant velocity, then the electrical energy given to the armature ($C\,e$) is the exact equivalent of the mechanical work done.

It will thus be seen that series motors produce a powerful torque at starting but that their speed is variable. Shunt motors run at practically constant speed, but they need to be started on a loose pulley. The speed of a motor can be controlled by weakening or strengthening the magnetic field in which the armature revolves. It will rotate slowly in a strong magnetic field and very rapidly in a weak magnetic field. Hence with a shunt motor the more resistance we have in circuit with the magnetising coils the more rapidly will the armature rotate. In order to prevent the great rush of current that takes place on switching a motor directly on to the mains, starting resistances are always provided. Some of the resistance boxes provided with motors are very ingenious, resistances being gradually cut out of the circuit as the motor speeds up, and permitting the regulation of the speed by the insertion of resistance in series with the armature or with the shunt windings, or with both.

A motor-generator is practically a motor coupled up so as to drive a dynamo. The armatures of the motor and generator are on one shaft, so that they run at the same speed. They are used when it is required to change the pressure of supply. For example, for electrolytic work a very low pressure and a very large current are desirable. Hence, if we use one of these machines the motor may be taking 5 amperes at 200 volts and the dynamo giving 70 amperes at 10 volts. The efficiency of the conversion is thus 70 per cent., 1,000 watts being supplied and 700 being utilised. This would correspond to an efficiency of about 84 per cent. for both the motor and the dynamo. Motor-generators are often used for charging secondary cells. They are largely used for telegraphic and telephone work, being in many cases far more economical than primary batteries.

A booster is a motor-generator connected up in a particular way (fig. 3). Suppose we have a dynamo supplying mains for lighting purposes (see figure), then the farther we get away from the dynamo the less is the voltage between the mains, owing to the volts expended in driving current through their resistance. In order to keep up the pressure at the far end of the mains a booster can be used. One end of it is a shunt motor connected across the mains, and the other is a series dynamo in circuit with one of the mains. As the shunt motor is connected across the mains it will always be turning. If there is no load at the far end of the mains there will be no current through the series dynamo. When there is a load, current flows through the series coils and the magnetic field in which the armature rotates is strengthened, and hence volts are added to the line. By various regulating devices the voltage can be kept constant or even made to increase as the load is increased. Boosters are much used in connexion with electric traction work either singly or in conjunction with storage cells.

In a motor-generator we have two armatures and two magnetic fields. In a dynamotor we have only one magnetic field and one armature with two separate windings on it. These two

windings are connected to commutators at opposite ends of the shaft. Hence we can drive either end as a motor and take current from the other. It is very analogous to an alternating current transformer. As both windings rotate in the same magnetic field, the ratio of the pressures at each end would be invariable if the armature windings had no resistance. In practice, however, the pressure got from it diminishes as the load increases, and we cannot compensate for this in any way by altering the magnetic field, as both windings are in the same field. A dynamotor runs very smoothly with practically no sparking at all loads, and there is no necessity to shift the position of the brushes as the load increases. It is cheaper than a motor-generator, and can be used for charging battering or electro-plating.

GENERAL BUILDING NEWS.

CHURCH, BLACKBURN.—The foundation stone of St. Gabriel's School Church, Blackburn, was laid recently. The building will cost about 1,500*l.* The architect is Mr. A. J. Casey, Blackburn. Mr. James Parker, Blackburn, is the contractor.

CONGREGATIONAL CHURCH, IPSWICH.—Alterations and additions are being made at the Tacket-street Congregational Church, Ipswich. The principal addition is the Langston Hall. At the rear of the church a church parlour will be erected of Kentish rag facings and Bath stone dressings. The architects are Messrs. Eade & Johns, and the builder is Mr. Fred. Bennett, of Ipswich.

MISSION CHURCH, LEEDS.—The foundation stone of a mission church at the foot of Cardigan-terrace, Leeds, was laid on the 1st inst. The building will be in brick, and will seat 500 persons. Mr. Percy Robinson is the architect. The contractors are as follows:—Mr. J. T. Wright, Leeds, bricklaying; Messrs. J. Ledgard & Son, Leeds, joiner work; Messrs. Mountain & Son, plastering; Mr. A. Ackroyd, painting; and Messrs. Teal & Somers, heating apparatus.

FREE CHURCH, EDZELL, FORFARSHIRE.—On the 2nd inst. the foundation stone of a Free church in course of erection at the south end of Dalhousie-street, Edzell, was laid. The building will seat 350 persons, and attached will be a hall to seat 100. Mr. P. H. Thoms, of Dundee, is the architect.

WESLEYAN CHAPEL, TANFIELD, YORKSHIRE.—The foundation stones of a new Wesleyan chapel at Tanfield, in the Masham Circuit, were laid on the 3rd inst. The chapel will seat 180 persons, and the cost will be about 1,000*l.* The architect is Mr. W. J. Morley, Bradford and Harrogate.

THEATRE, BRADFORD.—Extensive alterations are being carried out at the Prince's Theatre, Bradford. The proscenium has been widened and the circle and gallery reconstructed. The alterations will provide accommodation for 1,000 more persons; the total will be 3,400. The electric light is being installed. The architect is Mr. Longley, the architect of the theatre. The clerk of works is Mr. T. Bruff.

PALACE THEATRE OF VARIETIES, MANCHESTER.—The Manchester Palace Theatre of Varieties was reopened on the 4th inst. after redecoration. The work, which included various structural alterations, was carried out under the supervision of Mr. Frank Matcham.

PUBLIC LIBRARY, WEST HAMPSTEAD.—On the 2nd inst. the foundation stone was laid of a branch library for West Hampstead. The site of the library is at the corner of Westbere-road and Sarre-road. The building is being erected by Messrs. F. Gough & Co., from the design and under the superintendence of Mr. Charles H. Lowe, Surveyor to the Vestry, and will consist of one story, with a basement containing store and furnace-room. The accommodation will consist of a lending department, a magazine and reference library 31 ft. by 19 ft., and a news room 31 ft. by 20 ft., with a room for the staff, lavatory, &c. The walls will be faced externally with red bricks and red Corsehill stone. The roof will be covered with Broseley tiles. The floors are to be of wood blocks, on a concrete foundation. The building will be lit by electricity supplied by the Vestry. The cost will be about 3,000*l.*

CLOCK TOWER, MAIDENHEAD.—The new jubilee clock tower at Maidenhead has just been completed and the clock started. The clock has four dials and strikes the hours. The architect for the tower was Mr. E. J. Shrewsbury, of Maidenhead; and the clock is by John Smith & Sons, of Derby.

BANK, DEWSBURY.—New premises for the London and Yorkshire Bank, Limited, were opened at Dewsbury on the 23rd ult. The building, which is at the junction of Northgate and Corporation-street, is of Aberdeen grey granite to the first floor windows, the walls above being faced with ashlar wallstones from the Holmfirth quarries, with bands and mouldings of grey granite. The entrance is at the corner of the two streets. The bank is on the ground floor, and comprises a large bank-room 34 ft. by 31 ft., the bank manager's room 12 ft. by 12 ft., and a strong room 10 ft. by 12 ft. The woodwork is of oak, French polished. The work was carried out by the following contractors:—Excavator, mason, and bricklayer's work, Messrs. William Scott & Sons, Dewsbury; carpenter and joiner's, including bank fittings, Messrs. E. Chadwick & Sons, Staincliffe; slater's, Mr. W. R. Thompson, Dewsbury; plumber and glazier's, Mr. Frank Newsome, Dewsbury; plasterer's, Messrs. C. Howroyd & Son, Bradford; painter's, Mr. Ned Ramsden, Dewsbury; the electric light installation by Mr. George J. Hood, Dewsbury. The plans were prepared by Mr. J. Lane Fox, of Dewsbury, with Mr. Ernest Newton, the bank's London architect, as consulting architect.

PUBLIC BATHS, STOURBRIDGE.—Mr. Isaac Nash, Chairman of Stourbridge Urban Council, laid the foundation-stone, on the 2nd inst., of the new baths which the Council are erecting in Greenfield-avenue. The baths have been designed by Mr. Woodward, the Town Surveyor, and are being erected by Mr. Vale, of Stourport. The water area of the swimming-bath will be 75 by 28 ft., and there are private baths for both sexes. The cost of the scheme will be about 4,500*l.*

VICARAGE, SCARISBRICK, LANCASHIRE.—A new vicarage is being erected at Scarisbrick, on a site near the church. The architect is Mr. G. S. Pucker, of Southport, and the cost will be about 1,500*l.*

PROPOSED TOWN HALL FOR CHELTENHAM.—A special meeting of the Cheltenham Town Council was held on the 3rd inst. to consider a report and plans by Mr. F. Waller, architect, for a new town hall, on the Winter Garden site. The great hall is to be 112 ft. by 52 ft. and 45 ft. high, and will accommodate 1,000 on the floor, with another 450 odd in the galleries. There are to be refreshment and supper rooms, with drawing-rooms, card rooms, supper-rooms, &c. The architect did not think an outlay of less than from 25,000*l.* to 30,000*l.* should be calculated for a good plain building, exclusive of decorative features and fittings, and a further sum of 5,000*l.* ought to suffice for the latter works. After an inspection of the plans, a motion to adopt them was carried, and it was further resolved to apply to the Local Government Board for sanction to a loan of £35,000 for the purpose in view.

PUBLIC BATHS, ROMFORD.—The new public baths erected in Mawneys-road were opened on the 2nd inst. The swimming bath has a water area of 70 ft. by 30 ft., with dressing-boxes on each side and galleries over. Slipper baths and an establishment laundry have also been provided on the ground floor, and there are separate entrances to the building for men and women. A workshop and class-rooms for technical instruction have been provided on the ground and first floors with superintendent's rooms over. The water in the swimming bath and for the slipper baths is heated by a Cornish boiler, the boiler being also utilised for warming the building by means of low-pressure steam pipes and radiators. The water for the baths is obtained from a well sunk on the site. The front elevation to Mawneys-road is executed in red brick and Bath stone, and the roof covered with green slates; the rear buildings are executed in yellow stocks. The engineering work has been executed by Messrs. Moorwood Sons & Co., of London and Sheffield, the builder being Mr. Thomas Bruty, of Hornchurch, Essex, and the architects Messrs. Harrington & Ley, of London and Romford.

PUBLIC SLAUGHTER-HOUSE, DENNY, STIRLINGSHIRE.—A public slaughter-house is to be erected at Denny from plans by Messrs. M'Luckie & Walker, architects, of Stirling. The estimated cost is 1,000*l.* The contractors are:—Masonry, Messrs. M'Lean & Grant, Denny; joinery, Messrs. David Mialls & Sons, Dunipace; plastering and slating, Mr. D. M'Nair, Falkirk; plumbing, Messrs. John Hunter & Sons, Denny.

RIPON TOWN HALL IMPROVEMENTS.—The Ripon Town Hall improvements have been completed, from the designs and under the supervision of the City Surveyor (Mr. Edson). The plaster, tile, and mosaic work has been done by Mr. W. F. Blackburn, and the joiner's work, glazing, and painting by Mr. E. Johnson, both of Ripon.

MUSIC HALL, BALHAM.—A new music hall has been erected in the High-road, Balham, on the site of the old swimming baths. Mr. W. Hancock was the architect. The decorations are by Messrs. Dean & Co., of Birmingham. The house is calculated to hold 1,500 or 1,800 full.

CITY OF DUBLIN TECHNICAL SCHOOLS.—Additions and improvements to the City of Dublin Technical Schools, Lower Kevin-street, are at present in progress. In designing the plans the aim of the architect has been to incorporate the new with the old structure as much as possible. For this purpose the floors of the various stories have been kept on the same level and openings formed in the dividing walls. When completed the capacity of the schools will be increased fully threefold. The new work is faced with red brick, having stone dressings. Due provision has been made internally for all the requirements of technical teaching, such as workshops, laboratories, lecture-rooms, and classrooms, all of which are conveniently grouped round the main staircase. Special attention has been given to the accommodation for instruction in drawing, both mechanical and freehand. For this important branch six large rooms, mostly lighted from the north, have been set apart. Three of them can when required be converted into an Assembly Hall by an arrangement of screens. The hall measures 63 ft. by 33 ft., and will have an open timber roof of ornamental design, over the centre of which is fixed a ventilating turret, covered with copper, and rising 80 ft. above the street. The new buildings will be heated throughout by radiators and pipes on the low pressure system, by Messrs. Maguire & Gatchell, who are also the contractors for the plumbing work. The general contractors for the building work are Messrs. H. & J. Martin, of Belfast and Dublin. The architect for the whole is Mr. William M. Mitchell.—*Dublin Express.*

NEW OUT-PATIENTS' DEPARTMENT, ANCOATS HOSPITAL, MANCHESTER.—A new out-patients' and accident department has been erected in connexion with Ancoats Hospital. The new accommodation provided comprises a waiting hall for patients, in connexion with which are male and female accident-rooms, each with a dressing-room attached; three doctors' consulting-rooms, with dressing-rooms adjoining, and a bathroom. At the end of the waiting-hall nearest the entrance are the registrar's and attendants' offices, and at the end adjoining the main building is a dispensary. The waiting-hall, which occupies the central portion of the building, is lighted from above the flat roofs of the accident and consulting rooms, which are arranged on either side. This will enable additional ward accommodation being provided in the future, should occasion demand, without any disturbance of the present building. The whole of the rooms are tiled from floor to ceiling, and the door and window architraves are executed in glazed faience ware. The joiners' work is of mahogany, and the floors are finished in marble mosaic. The work has been carried out in accordance with plans prepared by Mr. W. Cecil Hardisty, architect, of Manchester. The general contractors were Messrs. Wilson & Toft, of Ardwick.

NEW INFIRMARY, WEST HAM.—The West Ham Board of Guardians some years ago purchased Forest House, near Leytonstone, with its grounds, 45 acres in extent. On this ground they have commenced a large infirmary which, when completed, will consist of four wards, three stories high, with accommodation for 672 patients. Each block will be connected by a central corridor. An administration block of buildings, board-room, and chapel, committee rooms, dispensary, and rooms for lunatics, will be built behind. Provision is also to be made for the accommodation of seventy nurses. The electricity will be generated on the premises, and various workrooms are also to be built. It is expected the building will cost 225,000*l.* The architect is Mr. Sturdy, and the builders Messrs. John Shillitoe & Sons, of Bury St. Edmunds.

PROPOSED NEW THEATRE, DUNFERMLINE.—Plans have been passed for a new theatre for Dunfermline. The front elevation will be 83 ft. and will have a centre gable, with tower at either end and a moulded pediment over the main entrance, which will have an ornamental verandah projecting over the pavement. All the entrances and exits will lead from and to Reform-street. In regard to the interior, seating accommodation will be provided for about 1,250 persons, and the total holding capacity will be for 1,600. The plans have been prepared by Mr. Roy Jackson, architect, Perth.

CONSERVATIVE CLUB, HOLBECK, LEEDS.—A new club-house, erected by the Holbeck Conservative Club-house Company, Limited, in Sweet-street West, was opened recently. The new club premises stand nearly opposite the Holbeck Liberal Club, close to the junction of Marshall-street and Sweet-street. The club-house consists of two stories, with a billiard-room and bar on the ground floor, and an assembly-room above. The construction has been carried out under the supervision of Mr. Richard Wood, architect, of Leeds, and the cost of the whole amounts to something like 2,400*l.*

LUNATIC ASYLUM, WARLINGHAM, SURREY.—The Mayor of Croydon (Councillor N. Page) laid the foundation-stone recently of the Borough Lunatic Asylum, now in course of erection at Upper Warlingham, at an approximate cost of 200,000*l.* The site of the new asylum comprises 68¼ acres. When completed the building will accommodate 400 patients—200 male and 200 female. There is room, however, for extension to accommodate a further 200, the administration accommodation already provided for being sufficient for the whole. The original estimate for the asylum and works in connexion with it was 140,432*l.* (including 3,900*l.* for the purchase of land, and 105,432*l.* for the erection of building). Later on it was found necessary to increase the estimate by 58,643*l.* The excess is accounted for largely in consequence of the rise in the price of materials, partly because of further accommodation having to be provided in accordance with the demands of the Lunacy Commissioners, and partly because of wages being higher than at first thought. The architects are Messrs. George A. Oatley and W. S. Skinner, of Bristol. The contractors are Messrs. Wilcott & Ward, of Wolverhampton. The clerk of the works is Mr. Verrall, and the foreman in charge Mr. W. G. Colbourne.

THE SANITARY INSTITUTE.—At an examination in practical sanitary science, held at Liverpool, on July 20 and 21, 1900, seven candidates presented themselves, and the following five were awarded certificates:—Matthew Chapman, James Greenwood, R. Holmes, A. G. Leigh, and F. Wilkinson.

SANITARY AND ENGINEERING NEWS.

OLDHAM WATERWORKS EXTENSION.—The members of the Oldham Corporation made their annual inspection of the waterworks on the 30th ult., and at the same time Mr. Griffiths, vice-chairman of the Waterworks Committee, opened Rooden reservoir, and Mr. A. Ashworth unveiled a tablet in the valve-house, commemorating the event. The completion of the scheme marked the exhaustion of all the powers obtained for the construction of works by the Corporation. The first sod was cut on July 30, 1894, and the reservoir has a top water area of 21 acres, is at an elevation of 1,068 ft. above ordnance datum, and has a capacity of 265,000,000 gallons. The natural gathering ground of the reservoir is only 25 acres, but it is augmented by collecting the flood waters from 370 acres from the Wenshaw Valley and 423 acres from the Piethorn Valley, making a total gathering power of 818 acres. The works have been designed by Mr. G. H. Hill, M.Inst.C.E., of Manchester and London, the resident engineers being Mr. W. Watts during the first portion, and Mr. C. J. Battey (the present waterworks manager) during the latter portion.

PROPOSED REACTION BREAKWATER FOR THE MISSISSIPPI.—Ever since 1837, the Louisiana Government has made sundry sporadic attempts to increase the depth of water at the delta mouths of the Mississippi River, but without satisfactory or permanent results. Harrowing and dredging operations, alone, and combined with jettes, were tried, but were only moderately successful, and so long as work continued. In 1875, Mr. Eads proposed to improve the South West Pass of the river by means of jetties. After some controversy he was commissioned to undertake the opening of the South Pass, and the effect of his endeavours was to secure a navigable channel 26 ft. deep by 700 ft. wide, which has been maintained up to the present time. As the contract has now expired, and in view of the increased dimensions of vessels, there is an urgent need of additional facilities for navigation. So far, no course of action has been inaugurated, although two or three schemes have been prepared. In January, 1899, a Board of Engineers appointed by the State recommended the formation of two parallel straight jetties, placed 2,400 ft. apart, to extend for about seven miles up the South West pass. Levees, sills, and auxiliary works were also proposed, in addition to two powerful dredges. These plans were merely tentative, and do not appear to have commanded the confidence even of their authors. Consequently, another Board of Engineers was created, and in January, 1900, a radically different plan was forthcoming. According to this, reliance was to be placed mainly upon dredging, but partly upon the establishment of two jetties, shaped so that they formed a bottle-shaped figure in plan, the neck being at the seaward end. The report of the second Board of Engineers closes with the curious recommendation that the work should not be commenced "until experiment and experience have developed the most economical methods of construction." Thus it appears that the efforts recently made by the State to obtain trustworthy guidance have not been particularly successful. Professor Lewis M. Haupt now brings forward the suggestion, in the July number of the *Journal of the Franklin Institute*, that a reaction breakwater should be formed for the opening of the South West Pass of the river. It is estimated that this particular channel carries down no less than 102,500,000 cubic yards of silt per annum, and any system tending to bottle up the natural outlet for this enormous quantity of material, and relying chiefly upon dredging, must involve immense and interminable expenditure. Professor Haupt does not advise a policy of conflict with the powers of nature, but rather one which will enable them to be used in removing the obstacles now existing to navigation. He proposes a single curved jetty disposed so as to produce a reaction and scour across the entire bar in such a manner as to effect lateral displacement of the material, and the deposition of silt on the opposite bank of the channel. It is a well-known fact that concave river banks produce deep pools and variations of curve occasion corresponding variations of depth. The rectilinear form, on the other hand, tends to reduce depth. In order that a river may exert destructive force upon its bed or banks concentration of energy is necessary, and parallel jetties do not conduce to this effect. A single concave curved jetty, as pointed out by Professor Haupt, does actually produce compression, causing reaction, deflection, and deep erosion; and if properly applied to a sedimentary delta bar it converts dispersion into concentration. Thus the available energy of the stream may be trained and applied to the maintenance of an ample waterway. In September last year Professor Haupt read a paper before the American Society of Civil Engineers on the subject of "The Reaction Breakwaters as applied to the Improvement of Ocean Bars." This paper was discussed at great length, and, although one or two members remarked the principle was by no means new, the general concensus of opinion was strongly in favour of the system advocated.

THE ARTHUR CATES PARIS EXHIBITION PRIZE.—The Arthur Cates Paris Exhibition Prize has been awarded to Mr. E. W. M. Wonnacott.

MISCELLANEOUS.

OLD BIRMINGHAM.—The Great Western Railway Company have acquired some premises between Lionel-street and Great Charles-street, on the west side of Snow Hill, for the purposes of an enlargement of their station at Snow Hill. Amongst the property to be demolished are Nos. 98, 99, and 100, Snow Hill, where the present firm of Messrs. Hammond, Turner, & Sons were originally established in 1717; it is believed that they represent the oldest button factory in England.

A NEWSPAPER LIST.—Messrs. Charles & Edwin Layton send us their pamphlet under the title "Handy Newspaper List; 1900" (6d.); containing the names and addresses of all the newspapers and periodicals published in England, the monthly and quarterly publications being for this purpose included under the general term "newspapers," though it is an unusual application of the word; it would have been more correct to have entitled the publication "Newspaper and Magazine List." The London publications come first, beginning with the dailies and ending with the quarterlies; the provincial towns then follow in alphabetical order. The daily newspapers in each town are given in larger type and at the head of each list, so that they can be distinguished at a glance. The publication is compact and useful.

MANCHESTER SHIP CANAL.—From the half-yearly report of this company it appears that in the ship-canal department the receipts amounted to 141,346*l.*, as against 124,183*l.* for the corresponding period of last year. The expenditure, however, has been larger than last year, so that only about half this increase is clear gain. An Act of Parliament has been obtained giving the company compulsory power to purchase the Manchester race-course and other property required for the intended dock and railway extension. From the engineer's report as to works, &c., we learn that the depth of water in the ship canal and docks has been fully maintained, although no diminution has taken place in the quantities of sludge and other material deposited in the docks and canal. A further area of land at Weaste has been levelled and prepared for the storage of timber, and an additional road and the necessary railway connexions are now in course of formation. The new workshops at Mode Wheel, together with the yard and railway connexions, have been completed and are in use. The old workshops have been removed and the site occupied by them has been laid out for traffic purposes. The extension of Trafford Wharf has been completed and is being employed for the timber and other trades. The new railway connecting the general dock railways with Ordsall Dock (authorised by the Company's Act of 1896) has been completed and is in use. At Throstle Nest a berth for barge traffic has been formed above Trafford Road, and the railway connexions are in progress so as to utilise further the timber storage ground recently provided there. The embankments and slopes of the canal generally are in good condition, and the works throughout the canal have been efficiently maintained. On the north quay of No. 8 Dock a large transit shed is in course of construction by the Manchester Ship Canal Warehousing Company, Limited; the works required for the foundations are in progress, and the contracts for the ironwork, superstructure, and flooring have been let.

REGISTERED PLUMBERS, ABERDEEN.—The tenth annual meeting of Registered Plumbers in the Aberdeenshire, Kincardineshire, and Banffshire district was held in Gordon's College, Aberdeen, on the 3rd inst., Professor M. Hay, M.D., Medical Officer of Health, Aberdeen, President of the District Council, in the chair. It was reported that things were working as well as for many years; that at the close of the year there were 136 registered plumbers on the list—forty-five masters and ninety-one journeymen; that there were from twenty to thirty students attending the theoretical and practical classes, and that the finances were in a satisfactory condition. The report was approved, and the office-bearers and members of council reappointed.

ELECTRIC LIGHTING, SHIPLEY, YORKSHIRE.—On the 3rd inst. Colonel Coke, an Inspector to the Local Government Board, held an inquiry at Shipley relative to an application of the Shipley District Council for sanction to borrow 22,000*l.* for electric lighting purposes. Evidence was given by Mr. R. C. Quinn, engineer to the Council.

LEGAL.

ACTION BY ARCHITECTS IN THE CHANCERY DIVISION.

THE case of Metcalf *v.* Hosegood came before Mr. Justice Stirling, in the Chancery Division, on the 1st inst. It was an action brought by the plaintiff for rescission of a contract to purchase Thorney House, Palace Gate, Kensington, and some adjoining land, at the price of 88,000*l.* The facts were shortly these. The conveyance to the defendant of the property in question was dated February 21, 1898, and part of the property was subject to restrictive covenants. After the defendant purchased the property he commenced to erect flats upon it, but he had a dispute with the London County Council as to the building line. This dispute, however, was ultimately settled. Subsequently he had another dispute with the trustees of the late Sir John Millais, who owned an adjoining house, as to the access of light, but this dispute was also settled. The defendant then, partly through financial difficulties and illness, discontinued building operations, and in December, 1898, a Mr. Rogers and the trustees of Sir John Millais commenced an action against him for an injunction to restrain him erecting flats on the site of Thorney House and the adjoining land, on the ground that such erection would be a breach of the restrictive covenants. This action was set down for trial in May, 1899. On May 1, 1899, a Mr. McManus interested himself in the sale of the property for the defendant, and this gentleman asked a Mr. Farmer, an estate agent, to submit the property to the plaintiffs, a firm of architects and surveyors, as one suitable for the erection of flats. This Mr. Farmer did, and on May 2, the gentleman, Mr. McManus, and the plaintiffs met. Mr. McManus then produced to the plaintiffs plans and particulars of flats to be erected on the site. The plaintiffs then entered into negotiation for the purchase of the property with the view of erecting flats thereon, and during the course of the negotiations an abstract of the deed containing the restrictive covenants was produced to the plaintiffs' solicitor. The case for the plaintiffs was that at that and at no time during these negotiations was the action of Rogers *v.* Hosegood brought to their notice. On the contrary, they alleged they were told by Mr. McManus that there was nothing to prevent the building of flats upon the property. On July 25, 1899, the plaintiffs entered into an agreement to purchase the property, and paid a deposit of 1,000*l.*, it being provided that completion of the purchase should be postponed until December 30, 1899. The action of Rogers *v.* Hosegood came on for trial before Mr. Justice Farwell in November, 1899, and in that action the plaintiffs succeeded, and this decision was subsequently affirmed by the Court of Appeal. The present plaintiffs saw a report of the proceedings before Mr. Justice Farwell, and commenced this action for rescission of the contract on the ground that there had been such misrepresentation of fact as entitled them to avoid the contract.

Mr. Justice Stirling held that Mr. McManus, as the defendant's agent, had represented to the plaintiffs that there was nothing to prevent a block of residential mansions as flats from being built on the site, and that the plaintiffs were entitled to rescission of the contract.

Judgment accordingly.

Mr. Dickens, Q.C., Mr. Upjohn, Q.C., and Mr. H. White were counsel for the plaintiffs; and Mr. C. E. Jenkins, Q.C., and Mr. G. Lawrence for the defendant.

APPLICATION BY THE OWNER OF A BUILDING ESTATE IN THE ISLE OF WIGHT.

THE case of Cole *v.* the Isle of Wight Land Company came before Mr. Justice Stirling in the Chancery Division on the 3rd inst. In this case the plaintiff had purchased six plots of land from the defendants on a building estate which had been developed near East Cowes. The land was conveyed to the plaintiff without any reservations whatever, but subsequently the defendants had constructed a sewer for the drainage of the whole estate which went through part of the plaintiff's land, and the plaintiff now sought an interim injunction to restrain defendants permitting sewage to flow through the sewer. The defendants alleged that the sewer had been passed by the Local Authorities, and that it now vested in the Local Authorities, therefore they were unable to effect any alterations.

Mr. Justice Stirling said it did not appear to him there was any possible justification for the action of the defendants in making a sewer through the plaintiff's land which had been conveyed to him without reservation, but the plaintiff seemed to have known of what had been done as long ago as September, 1899, and had he come then and asked for an injunction, the possibility was he would have succeeded, but he had delayed doing so so long his lordship thought he ought not now to grant an interlocutory injunction. What the plaintiff might obtain at the trial was another matter. His lordship therefore declined to make any order on the motion.

HEAVY CLAIM BY BUILDERS.

THE case of Patman & Fotheringham, Limited, *v.* Chadwick came before the Court of Appeal, composed of Lords Justices A. L. Smith and Vaughan-Williams, on the 7th inst., on the defendant's appeal from an order of Mr. Justice Lawrance dismissing an appeal from an order made by the Master in Chambers directing that judgment should be entered against the defendant for 9,500*l.* odd, and that the defendant should have leave to defend as to the balance of the claim.

Mr. Horace Kent in support of the appeal said that the plaintiffs' claim was for 14,209*l.* 18*s.* 9*d.*, and the circumstances under which the claim arose were these: The plaintiffs were builders, and the defendant was and is the lessee of a piece of land in Queen's Gate. The plaintiffs contracted with the

defendant to erect for him a set of residential flats for a sum of 9,800*l.* odd, and part of the bargain between the parties was that the plaintiffs should have from the defendant a mortgage of his piece of land, which would, of course, carry with it the buildings which the plaintiffs were erecting and were about to erect. The mortgage was executed on October 3, 1899. This mortgage recited that a sum of 3,310*l.* was due to the plaintiffs, and the mortgagor created a charge to secure that sum to the plaintiffs, and "also any other sum or sums of money which might hereafter be advanced, paid, or incurred by the plaintiff company on account of the mortgagor, or which may become owing from him to the company on any account whatsoever." Simultaneously with the document being executed by the defendant the plaintiffs entered into a contract with the defendant to complete the buildings for a sum of 6,556*l.* 6*s.* 2*d.* The plaintiffs then proceeded to erect and complete the buildings, and the architect nominated in the contract to give certificates certified that the sum of 5,385*l.* was due to the plaintiffs over and above the 3,310*l.* In April last, when the buildings were completed, the defendant was anxious to take possession of the buildings and to pay off the plaintiffs' claim. Ultimately the plaintiffs rendered an account. Mr. Young, the architect, went through the account, which amounted to 14,045*l.* On June 27 the defendant's solicitor wrote to the plaintiffs' solicitor offering to pay the plaintiffs, subject to the defendant's right to take measurements of the buildings, &c., 9,532*l.* 13*s.* 6*d.*, and to deposit a further sum of 1,000*l.*, pending the appointment of an arbitrator or referee to whom the matter could be referred. The defendant's solicitor further offered, if the plaintiffs would not accept this offer, to pay 10,000*l.* in full discharge of all the plaintiffs' claims. The plaintiffs refused to accept that offer, and the defendant then issued his writ asking for an account to be taken on July 10. The plaintiffs, on the following day, issued a writ in the Queen's Bench Division against the defendant. The defendant's action had been referred to an official referee. The plaintiffs then applied for judgment in their action, and the Master in Chambers, having regard to the letter which had passed from the defendant's solicitor to the plaintiffs' solicitor, directed judgment to be signed in favour of the plaintiffs for 9,532*l.* 13*s.* 6*d.*, and leave for the defendant to defend as to the balance. The learned counsel contended that where accounts had to be taken the Courts would not place a defendant mortgagor in such a position as to have personal judgment signed against him which might be the means of withholding from him the right of redeeming his property. He submitted that the defendant ought to have unconditional leave to defend.

Mr. Herbert Reed, Q.C. (with him Mr. Poyser), having been heard in support of the order appealed from, their lordships' varied Mr. Justice Lawrance's order by directing that the plaintiffs should have leave to sign formal judgment for the sum of 8,695*l.* instead of 9,532*l.* 13*s.* 6*d.*, and subject to this they affirmed the learned Judge's order and dismissed the appeal, the costs of the appeal being made costs in the cause.

DISPUTE AS TO BUILDING PLANS AT EASTBOURNE.

THE case of the Queen (*ex parte* Wright) *v.* the Mayor and Corporation of Eastbourne came before the Court of Appeal composed of Lords Justices A. L. Smith and Vaughan Williams on the 4th inst., on the appeal of Mr. Wright from a decision of a Divisional Court composed of Justices Ridley and Darling discharging a rule *nisi* for a *mandamus* calling upon the Corporation of Eastbourne, as the Urban Sanitary Authority, to show cause why a writ of *mandamus* should not issue directed to them, commanding them to approve of the building line as shown on the plans submitted by Mr. Wright to the Corporation for the construction of a block of buildings for the purpose of residential flats upon certain land adjoining a house called Mixbury House, Hartington-place, in the borough. The Corporation passed a resolution that the plans should be approved as complying with the by-laws, but disapproved as regarded the building line shown on the plans on the ground that the flats proposed to be erected would be brought forward beyond the front main wall of Mixbury House, being a house on one side of and in the same street as the proposed flats. In other words, the Corporation disapproved of the plans on the ground that the proposed buildings would be a contravention of Section 3 of the Public Health (Buildings in Streets) Act, 1888. The Divisional Court discharged the rule for a *mandamus*, holding that according to the decision in Smith *v.* Chorley Rural Council the matter was within the discretion of the Corporation, and the Court could not interfere by *mandamus* with the exercise of that discretion. From this decision Mr. Wright, the applicant, now appealed.

Lord Justice A. L. Smith, after hearing arguments by Mr. Macmorran, Q.C., and Mr. B. A. Hall for the appellant, and without calling upon Mr. C. A. Russell, Q.C., and Mr. Boxall for the respondents, said that in his opinion a *mandamus* ought not to issue to command the Local Authority to approve plans which the latter honestly considered were in contravention of the statute. He thought the appeal should be dismissed.

Lord Justice Vaughan Williams concurred, and the appeal was accordingly dismissed, with costs.

ANCIENT LIGHTS—IMPORTANT DECISION.

MR. JUSTICE WRIGHT on the 4th inst. delivered a reserved judgment in the Queen's Bench Division in the case of Warren and others *v.* Brown, the case having been tried before his lordship at the Leicester Assizes. The action was brought by the plaintiffs, the freeholders and tenants of premises at Leicester, for an injunction to restrain the defendant from obstructing their ancient lights. The plaintiffs also claimed a mandatory injunction and further relief. The facts sufficiently appear from the following judgment.

Mr. Justice Wright in giving judgment said: This case raises a question of general importance in relation to ancient lights—namely, whether the right which is acquired by statutory prescription is a right to the continuance of substantially the whole quantity of light which has come to the windows during the twenty years, or is ordinarily limited to a sufficient quantity of light for all ordinary purposes of inhabitancy or business. It seems strange that such a question should be still open for discussion, but there is a considerable body of authority in favour of either proposition. The facts are these:—The plaintiffs as the owners and the tenant of a building in the town of Leicester claim damages and an injunction in respect of the obstruction of the access of light to windows more than twenty years old. At the trial the claim was limited to two rooms, one on the ground floor and the other above the former, both facing to the south. For a length of about 17 ft. in front of these rooms the defendant has raised his own building from a height of about 20½ ft. to about 26 ft., but has set it back about 2 ft. or 3 ft., so that the width of the street between the two buildings which was about 17 ft. is now about 19 ft. Four out of five windows in each of the two rooms are opposite to that part of the defendant's building which I have mentioned. These windows are large and high. Those of them which are on the ground floor are, and for years have been, glazed with fluted glass for about half their height from the bottom. In addition to the front light both rooms receive much side light, especially from the east and east-south-east, from a wide street running north and south at a distance of about 50 ft. to 70 ft. Light is not in any direction cut off by very high buildings. To the south-east the defendant has taken down a high chimney-stack which to some extent used to intercept the light from that quarter. I find that the defendant has not obstructed or diminished to any material extent, if at all, the light coming to the upper of the two rooms in question. As regards the four windows on the ground floor, I find that the defendant has materially diminished the light which the plaintiffs enjoyed from those windows for twenty years past, but that abundant light remains for all ordinary purposes of inhabitancy or business. The room in its present state is better lighted than the ground floor rooms in many of the principal streets. The plaintiff Baum (the lessee of the premises) has during some years, but much less than twenty years, carried on in the premises, and particularly in the ground floor room in question, a manufacture of hosiery by means of machinery which requires a very exceptional quantity and quality of light for the continued and accurate adjustments of filaments to fine needles moving at speed in bundles of some hundreds. Before this manufacture was established at these premises, a different industry (manufacture of boots and shoes) requiring good, but not special or extraordinary, light was carried on there. I find that the defendant has by the acts complained of diminished the light, so that it is now materially insufficient during some part of the day for the special requirements of the plaintiff Baum's industry. I find that the plaintiff's premises have throughout the twenty years before action been suitable for such a manufacture as that now carried on by Baum, and that the kind of manufacture is, and has long been, common in the district, and has for twenty years past required more light than most other industries, but not until the last few years in so high a degree as at present, the older machines having been less delicate and complicated. I think that the light as at present exists would have been sufficient for any but the most recent kinds of machines. In my judgment no sufficient case for a mandatory injunction is made out in any view of the plaintiffs' rights. The inconvenience to which Baum was subjected can be, and to a great extent it has been, obviated by the removal of machines to the upper room, and in any case it can be remedied by some increased expenditure of gas. The question is whether the plaintiffs are entitled to damages. If they are, I assess the amount at 100*l.* for the tenant and 200*l.* for the reversioners.

His lordship then dealt exhaustively with the authorities bearing on the question, from 1865 until when it appeared to his lordship that the nature of the cause of action in a case for infringement of rights to light was not clearly settled. The learned Judge thought he must take it that the law was laid down in the case of the City of London Brewery Company *v.* Tennant, agreeing as that case did with the criterion expressed by Lord Cranworth in Clarke *v.* Clark, and that the plaintiffs, having an abundance of light left for all ordinary purposes of inhabitancy or business, were not entitled to relief on the ground that their extraordinary use had been interfered with. Unless, indeed, there was some such limitation of the right to light for ancient windows, it was difficult, as Lord Hardwicke observed in effect in the case of the Fishmongers' Company *v.* East India Company, to see how the ordinary extensions and improvements of towns could be carried on. If every house which had existed for twenty years was entitled to have all, or substantially all, the same light come to its windows as during the twenty years, no new houses could be built opposite to old ones, unless at a distance which would impose on servient tenements an unreasonable burden, and might involve grave public inconveniences. Nor, if that were law, could there well be any presumption that so long as 45 deg. of light, or some approximate angle, was left, there was no actionable wrong. It was not necessary in the present case to consider the question raised in the case of Lanfranchi *v.* Mackenzie, whether a right to an extraordinary quantity of light for extraordinary purposes could be acquired by prescription. His lordship accordingly, for the reasons given, entered judgment for the defendant, with costs.

Mr. Hugo Young, Q.C., and Mr. W. H. Stevenson appeared for the plaintiffs, and Mr. Stanger, Q.C., and Mr. Neilson for the defendant.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

7,318.—MEANS OF ESCAPE FROM FIRE: *C. Grayson.*—The telescopical platform is adapted for facilitating escape from a fire as well as for carrying hose pipes; its lower section is pivotted on to a frame which runs upon wheels; the upper two sections are to be extended by a windlass, the ropes passing over guide-pullies affixed to the sections; the middle section is turned, with a screw and a nut, upon its pivots, and when pulled up is supported with a strut. It is also provided with a ladder; upon the top section are swivelling standards for the hose pipes.

7,367.—FIRE AND SIMILAR ALARMS: *F. Dockree.*—By means of this contrivance an alarm is sounded and an electrical circuit is closed when two limiting temperatures are attained. Curved strips of metal having unequal expansions are joined at their one end to a trunnion, and at their other end by levers and links to an index pointer. The curvature of the strips changes together with a change of temperature and the pointer traverses the dial, two stops being set at the limiting temperatures and joined to one terminal of an electric bell circuit, whilst the index is connected to the bell's other terminal. As the index makes contact with either of the stops the circuit becomes closed and the bell is rung. A screw that raises or lowers an extension of the strips is used for setting the pointer in its correct position upon the dial.

7,426.—A STOP-COCK FOR OIL CANS, &C.: *Bettenant et Cie.*—The stop-cock is adapted for use with oil cans and other vessels which are canted when their contents are to be poured out; a nozzle and ports in the plug serve as inlets and outlets for the liquid, and passages are provided for the exit or admission of air; a cord or wire is passed through holes in a lug and an extension of the handle when the valve has been shut, and if sealed will prevent any undue interference with the can's contents.

7,428.—MORTISING CHISELS: *A. Summers.*—The chisel's rear face is grooved so as to make two parallel walls, whose height gradually increases, and which end in sharp points beyond the cutting edge. On the walls are formed ratchet teeth having inclined and horizontal sides, the points of the teeth lie in a plane which is parallel to the plane of the front face of the chisel, and the teeth will draw the core away from the mortise.

7,440.—BEACH-GROYNES, &C.: *E. Case.*—A bolt and crossbars fix each pair of uprights (as specified in No. 14,115 of 1896) to a box which has a bottom and sides only, and is put into a hole dug out on the foreshore and filled in the ordinary manner. The two uprights of one box take the ends of the planks between them, the top planks being fixed with bolts.

7,489.—KILNS FOR BURNING CEMENT: *B. Liban.*—By means of a double arch the kilns, which are fashioned after the shaft or pit type, are separated so as to constitute upper and lower drying chambers, The material, being pushed forward with rakes, falls through openings that are formed in the double arch. Other openings are furnished for the passage of tools, and for affording a view of the condition of the charge within. The grate is formed in inclined portions, and the kiln's lower part serves for a cooling space.

7,490.—WINDING-DRUMS FOR USE WITH CRANES: —*C. W. Hunt.*—To the two drums, which are loosely mounted upon the shaft, are fitted end bevel wheels which engage with pinions upon radial axes carried by a spur-wheel, which is in gear with a pinion upon the power shaft, which a clutch throws in and out of gear; spur wheels upon a lower shaft engage

with frictional clutches upon the outer ends of the drums, which are provided with band-brakes that will lock them when the clutches are out of gear; the mechanism enables the drums to be driven differentially in various ways, for instance, when the first-named clutch is out of gear and the frictional clutches are in gear, the two drums are driven in opposite directions, but when the latter clutches are out of gear, and the other clutch is in gear, the drums are driven in one direction and at a relative speed which depends upon the relative tension of the two ropes; in the case of jib cranes the jib is attached to the frame by means of a universal joint, and for an overhead traveller the scoop is lifted and lowered with one rope and is opened and closed with the other, whilst it is also sustained with a third rope which winds around a third drum mounted upon the axle of the two principal winding-drums.

7,538.—APPARATUS FOR TESTING THE STRENGTH OF MATERIALS: *G. Cussons and F. Eagles.*—The inventors devise a method of testing materials when exposed to tensile, crushing, shearing, and bending stresses. The knife-edge bearings of a lever are lifted up together with the stirrup by hydraulic action, or in the case of lighter machines by the screw-action of a worm and a worm-wheel, the worm-axis being mounted in a pivotted piece so that the removal of a bolding-pin disengages the gear; an adjustable shackle and a spring balance join the lever's long arm to the cross-bar; its short arm has a counter weight. The test-piece is gripped for tensile stress between shackles, to which shearing-shackles for shearing stress are connected. One of the former shackles supports the suspending-links for the compression block, and when a crushing test is to be taken a block is put between stops. In the case of a bending test a V-shaped piece is laid upon the compression block and the test-piece is laid upon that, so that it shall stretch between brackets which are adjusted upon a bar. When the test-piece breaks the shock is taken by a buffer-rod which has an adjustable sleeve, with washers of metal and rubber or leather.

7,541.—BRICK MOULDING: *F. Thornton.*—For reciprocating the charger or feed-box are arranged a connecting rod, a lever, and a cam upon a shaft which is driven at half-speed as compared with that of the main shaft by spur-wheels; thus are furnished means for moving the charger after the alternate strokes of the plungers, and for pressing each of the bricks twice within the mould that it may be duly faced and finished.

7,561.—CHIMNEY POTS: *F. Morgan & D. Jeremiah.*—The chimney top is fashioned in the shape of a pear or truncated cone, and is placed with its wider end uppermost; around the top portion is attached a wind fence and an inlet for air is formed at its base.

7,607.—A COMPOSITION FOR USE BY GILDERS AND OTHERS: *F. H. Lewis.*—The inventor's object is to ensure that the waste gold-leaf shall be saved. He makes a compound by treating finely-cut crude rubber with kerosene oil or its equivalent, and adding a small quantity of oil of benzoin to the pulp when the superfluous oil has been drained away after an interval of about twenty-four hours; the substance is then kneaded upon a slab of marble, and after it has become dry is ready for use. In operation the fragments of gold-leaf are gathered up with a wad made of the composition, which is applied to the work as it is in progress; the fragments are kneaded into the wad, which, having been used until it has become sticky, is treated suitably for the extraction of the gold which it has accumulated.

7,614.—SAFETY SUSPENDING-APPARATUS FOR CAGE LIFTS: *G. Fox and G. S. Wright.*—Plates that project from the cage slide against the outer faces of channel-shaped guides; cams upon the cage move up and down in the channels though normally without engaging with them, but the cams can be thrown into engagement with the guides (in order to stop the cage in the case of an accident) by means of a hand-lever, with worm-and-bevel gearing, within the cage. The engagement may be effected also automatically by operating a governor, which is driven by a rope that hangs throughout the entire depth of the well, and is passed round a pulley that is geared with the governor; when the speed becomes too rapid pinions are turned into gear by rising arms, and the drum thereupon winds up a rope which is fastened on to the cam.

7,633.—LATHS AND STRIPS FOR BUILDING PURPOSES: *W. Brandt.*—The invention is for a method of fastening sheets, laths, or strips of metal to bars in the construction of buildings, fencing, walls, and so on. The bars are passed through holes made in the sheets or plates out of the lines of their edges, and the plates are bent or corrugated; or the holes may be made close to the edges of the sheets, with tongues or bearing-surfaces at the edges of the perforations.

7,640.—APPLIANCE FOR USE IN CLEANING, PAINTING, OR REPAIRING WINDOWS: *H. Gorton.*—The appliance consists of a seat or chair having a hinged back whose lower edge—when the back is opened out—butts against the edge of the seat and is thereby secured in its place; the two portions may also be maintained at right angles to one another by means of jointed rods; a cranked rod joins the ends of two jointed arms to rubber-covered ends that press against the sides of the window frame whilst the chair is being used.

7,696.—HANDLES FOR SAWS, PLANES, AND OTHER TOOLS: *J. H. Webb.*—Screws that pass through brackets secure the handle to the block of the plane; in one form a peg upon the handle fits into a socket, and a screw passes through the handle itself; for the handles of saws the screws enter into a block, which is slotted to take the blade of the saw, or one of the brackets is slotted to answer that purpose.

7,726.—AN APPARATUS FOR DISINFECTION: *L. Roberge.*—Gaseous formaldehyde is produced by an apparatus wherein trioxymethylene is laid upon a perforated basin inside a chamber, and is volatilised by a current of heated air admitted from beneath; steam, produced in a generator which has hanging tubes and is heated with burners, passes to an ejector; the air and formaldehyde vapour are drawn out of the chamber moistened with steam, being expelled at a high velocity through a pipe which leads into the place that is to be disinfected.

MEETINGS.

MONDAY, AUGUST 13.

Institution of Junior Engineers (Summer Meeting at Newcastle-upon-Tyne).—Reception at the Town Hall by the Mayor; Visit to Messrs. Swan & Hunter's Works and the Works of the Electric Supply Company.

TUESDAY, AUGUST 14.

Institution of Junior Engineers (continued).—Visit to Sir W. G. Armstrong, Whitworth & Co.'s Elswick Works; the Engineering Department of the Durham College of Science; and the Works of the Newcastle and District Electric Lighting Company.

WEDNESDAY, AUGUST 15.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Institute of Sanitary Engineers (Incorporated).—Examination and Literary Committee at 2.30 p.m. General Purposes and Finance Committee at 3.30 p.m. Election Committee at 5 p.m. Council Meeting at 7 p.m.

Institution of Junior Engineers (continued).—Trip on the river to inspect the Tyne Improvement Commissioners Works.

THURSDAY, AUGUST 16.

Institution of Junior Engineers (continued).—Excursion to Sunderland to inspect the Works of the River Wear Commission.

FRIDAY, AUGUST 17.

Institution of Junior Engineers (continued).—Visit to the Allhusen Works of the United Alkali Works Company; the preliminary Works of the Corporation's Electric Tramway Undertaking; summer dinner in the evening at the County Hotel, the President, the Hon. Charles A. Parsons, F.R.S., in the chair.

SATURDAY, AUGUST 18.

Architectural Association.—Summer Visit to Mereworth House, near Wateringbury, Kent.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

July 24.—By CASTIGLIONE & GIBBINGS (at Brampton).

Brampton, Cumberland.—The Barley Stack Inn and cottage adjoining, *f.*	£890

By FULLER, HORSEY, SONS, & Co. (on the premises).

Woodchester, Glos.—Churches Mill and 2 a. 2 r. 34 p., *f.*	1,175
Southfield's Mills and 4 a. 2 r. 22 p., *f.*	2,340

By Messrs. SPELMAN (at Norwich).

Norwich.—Colegate-st., freehold buiness premises, warehouses and residence	2,100
St. Clement's-alley, freehold riverside premises and dye works, area 6,300 ft.	750
11, 13, and 15, Barrack-st., u.t. 63 yrs., g.r. 5*l.*; 5 and 7, Barrack-st., and 1 to 4, St. Paul's-opening, *f.*	285

July 25.—By NELMES, POOLE, & ATKINS (at Hereford).

Llanrothal, Hereford.—Parkside and 82 a., *f.*	1,150

By WOODHAMS & SON (at Hailsham).

Heathfield, &c., Sussex.—The Cowden Hall Estate, 100 a. 0 r. 6 p., *f.*	2,500
Warbleton, Sussex.—The Hole or Twizhurst Estate, 254 a. 0 r. 3 p., *f.* (in lots)	3,525

By COOPER & WACHER (at Canterbury).

Canterbury, Kent.—Monastery-st., a part of the site of the Old Monastery of St. Augustine and of the Church of St. Pancras, area 2 a. 3 r. 0 p., *f.*	3,000

By R. DALTON & SON (at Carlisle).

Lazonby, Cumberland.—Nord Vue Estate, 227 a. 3 r. 18 p., *f.*	4,590
New Inn Farm, 34 a. 2 r. 17 p., *f.* and c.	1,060
Garth and 3 a. 3 r. 19 p., c.	450
Ainstable, Cumberland.—Basco Dyke Head Farm, 154 a. 3 r. 25 p., *f.*	3,700

By E. GANDY (at Warrington).

Weaverham, &c., Cheshire.—Mere House Estate, 108 a. 1 r. 34 p., *f.*	10,000

July 26.—By FRANKLIN & SON (at Bishop's Stortford).

White Roothing, Essex.—Philpott's Farm, 80 a. 3 r. 38 p., *f.*	810
Freehold cottage and garden	145

By WYATT & SON (at Havant).

North Hayling, Hants.—Farm buildings, yard, and 0 a. 3 rd. 35 p., *f.*	250
Westbourne, Sussex.—Two freehold cottages	250

By G. DURRANT & SONS (at Bungay).

Ditchingham, Norfolk.—Six freehold cottages	295
Mettingham, Suffolk.—Enclosures of land, 36 a. 1 r. 19 p., *f.*	898
Freehold cottages	113
Minn's Farm, 17 a. 2 r. 36 p., *f.*	500
Benstead's Farm, 22 a. 0 r. 19 p., *f.*	£ab
Freehold double cottage	120
Shipmeadow, &c., Suffolk.—The Nunnery Farm, 54 a. 1 r. 33 p., *f.* and c.	915
Four freehold marshes, 8 a. 3 r. 26 p.	195
Hempnall, Norfolk.—Cullen's Farm, 14 a. 1 r. 27 p., *f.* and c.	800
Barsham, Suffolk.—High Common Farm, 73 a. 0 r. 18 p., *f.*	860

July 27.—By G. DURRANT & SONS (at Beccles).

Heckingham, Norfolk.—Enclosure of land, 12 a. 3 r. 25 p., *f.*	175
Kirby Cane, Norfolk.—Rose Cottage, and ½ a., *f.*	350

By J. HOWELL THOMAS & SON (at St. Clears).

Llandawke, &c., Carmarthen.—The Llandawke Estate, 621 a., *f.*	15,400

By NEWMAN & NEWMAN.

Hazleton, Glos.—The Manor Farm, 608 a. 0 r. 37 p., *f.*	4,000
The Puendown Inn and 2 a. 0 r. 7 p., *f.*	1,060

By F. C. SQUIRE & Co.

Sydenham.—74, Kirkdale, u.t. 29 yrs., g.r. 12, e.r. 55*l.*	440

By TILLETT & YEOMAN.

Farringdon-st.—Turnmill st., a profit rental of 73*l.* 18*s.* for 78 yrs.	550

By T. B. WESTACOTT.

Somers Town.—85, Stibbington-st., u.t. 40¼ yrs., g.r. 7*l.*	380
Holloway.—74, Parkhurst-rd., u.t. 31 yrs., g.r. 10*l.* e.r. 60*l.*	510

July 28.—By CHURTON, ELPHICK, & Co. (at Chester).

Whitby, &c., Cheshire.—The Whitby Stud Farm, 115 a. 2 r. 37 p., *f.*	12,000

By C. R. MORRIS, SONS, & PEARD (at Taunton).

Bradford, Somerset.—Rug Ham Close, 17 a. 0 r. 4 p., *f.*	1,200
Gardener's Hall and 67 a. 1 r. 8 p., *f.*	4,400
Nynehead, &c., Somerset.—Perry and Langhams Farm, 71 a. 1 r. 27 p., *f.*	3,000

July 30.—By CHANCELLOR & SONS.

Twickenham.—Richmond-rd., Ivermore, *f.*, r. 100*l.*	1,550

By DUNN, SOMAN, & COVERDALE.

Sutton Courtenay, Berks.—The Limes and 12 a., *f.*	500

By LEOPOLD FARMER.

Hampstead.—81, Gascony-avenue, u.t. 84 yrs., g.r. 8*l.* 10*s.*, e.r. 50*l.*	650

By HINDLEY & WILKINSON.

Chalk Farm.—Regent's Park-rd., f.g.r. 67*l.* 10*s.*, reversion in 58 yrs.	1,810
King Henry's-rd., i.g.r. 70*l.*, u.t. 61 yrs., g.r. 14*l.*	1,105
Camden Town.—Oseney-cres., i.g.r. 48*l.* 6*s.*, u.t. 49 yrs., g.r. 6*l.*	760

By MIDDLETON & CRACKNELL.

Hampstead.—Greenhill, Rookwood and 1 a., *f.*	5,000

By ROBINSON & FISHER.

Hampstead.—107, West End-lane, u.t. 85 yrs., g.r. 11*l.* 11*s.*	600
East Farleigh, &c., Kent.—Gallant's Court Farm, 229 a. 0 r. 36 p., *f.*	11,600
Gallant's House and 6 a. 0 r. 31 p., *f.*	2,050
St. Helen's House and 3 a. 2 r. 28 p., *f.*	1,950
Cokehurst and 6 a. 3 r. 8 p., *f.*	1,800
Boughton Monchelsea, Kent.—East Hall Farm, 157 a. 0 r. 17 p., *f.*	5,000
A plot of fruit land, 4 a. 1 r. 23 p., *f.*	460

By St. QUINTIN & SON.

Bloomsbury.—50, Gloucester-st., *f.*, r. 50*l.*	1,100

By A. SAVILL & SON.

Bulphan, Essex.—Martin's Farm, 48 a. 3 r. 13 p., *f.*	1,045
Judd's Holding, 6 a. 2 r. 22 p., *f.*	290
Thrift's Enclosures, 26 a. 0 r. 11 p., *f.*	500

By J. A. TRYTHALL.

Norwood.—118 to 124 (even), Holmesdale-rd., u.t. 65 yrs., g.r. 17*l.* 11*s.*, r. 108*l.*	820
26 and 28, Farnley-rd., u.t. 79 yrs. g.r. 14*l.*, r. 64*l.*	560

By WARLTERS, LOVEJOY, & TELFER.

Stroud Green.—15 and 17, Osborne road, u.t. 66 yrs., g.r. 12*l.* 12*s.*, r. 78*l.*	750
Harringay.—99, Lorne-rd., u.t. 73 yrs., g.r. 6*l.* 10*s.*, r. 37*l.*	400
108, Seymour-rd., u.t. 93 yrs., g.r. 7*l.*, e.r. 40*l.*	375

By ELLIOTT, SON, & BOYTON.

Kensington.—Palace Gardens-ter., i.g.r. 118*l.* 15*s.*, u.t. 53 yrs., g.r. 8*l.* 5*s.*	2,350
Palace Gardens-ter., i.g.r. 15*l.*, u.t. 52½ yrs., g.r. 1*l.*	270
Palace Gardens-ter., i.g.r. 60*l.*, u.t. 52½ yrs., g.r. nil	1,215
Brunswick-gardens, i.g.r. 75*l.*, u.t. 52½ yrs., g.r. nil	1,510
Bayswater.—Leinster-gardens, i.g.r. 61*l.*, u.t. 50 yrs., g.r. 11*l.*	950
Leinster-st., i.g.r. 30*l.*, u.t. 38 yrs., g.r. nil	465
Cleveland-gardens, i.g.r. 22*l.* 10*s.* u.t. 38 yrs., g.r. 2*l.*	345
Inverness-ter., i.g.r. 46*l.* 10*s.*, u.t. 38½ yrs., g.r. 9*l.*	810
Inverness-ter., i.g.r. 36*l.* 10*s.*, u.t. 38½ yrs., g.r. nil	680
Queen's-rd., i.g.r. 30*l.*, u.t. 38 yrs., g.r. 4*l.*	1,170
Queen's-rd., i.g.r. 49*l.*, u.t. 38 yrs., g.r. nil	805
186, Queen's-rd., u.t. 38 yrs., g.r. 8*l.*, r. 90*l.*	1,505
Hyde Park.—Little Chester-st., The Talbot p.-h., u.t. 19 yrs., g.r. 10*l.*, r. 60*l.*	640

By HAMPTON & SONS.

Newport, Monmouth.—The East Usk Branch Railway, with sidings, wharf, &c., also 11¼ acres of land and f.g.r.'s 142*l.* 10*s.*, reversions in 91, 81, and 37 yrs.	34,750
Andover, Hants.—Cricklade House and 20 a., *f.*	3,750
Catbrooke, Norfolk.—South Moor Farm, 93 a. 1 r. 7 p., *f.*	340
A freehold windmill, residence, and 5¾ a.	375
Two enclosures of land, 5 a. 0 r. 16 p., *f.*	170
The Green Farm (part of), 109 a. 1 r. 4 p., *f.* and c.	2,550
Watton Green Farm, 152 a. 1 r. 36 p., *f.* and c.	3,100
A copyhold cottage and 1 a. 1 r. 39 p.	185
White Hall and 18 a. 3 r. 38 p., *f.*	1,150
Caudell Green Farm, 112 a. 3 r. 28 p., *f.* and c.	2,510
Two freehold cottages and 1¼ a.	130
Bush or Beets Farm, 44 a. 1 r. 34 p., *f.* and c.	750
Sixteen cottages and 4 a. 0 r. 32 p., *f.* and c.	985

July 31.—By ABERCROMBIE & EDMUNDS.

Wood Green.—32, 34, 36, and 38, Lordship-lane, area 1¾ acre, *f.*, e.r. 131*l.*	2,220

By G. W. DAVIES & SON.

Islington.—2 and 3, Dean-street, u.t. 27 yrs., g.r. 8*l.* 8s. £660

By FIELD & SONS.

Rotherhithe.—45 and 47, Neptune-st., f. 400
15 and 17, Rotherhithe-st. (Mill Pond Wharf); 1 to 4, 15 and 16, Gillams-court, u.t. 33 yrs. g.r. 80*l.* 250
New Kent-rd.—Nos. 191 and 193, u.t. 54 yrs., g.r. 50*l.*, r. 150*l.* 1,150
Southwark.—363, Tabard-st., u.t. 73 yrs., g.r. 8*l.* 500
15, Little Hunter-st., u.t. 73 yrs., g.r. 8*l.* 500

By GOODMAN & CROWTHER.

Wickford, Essex.—Cray's Hill, freehold farm-house, and 25 a. 3 r. 0 p. 1,150
Cray's Hill, three enclosures, 19 a. 0 r. 4 p., f. 530

By HAMILTON & MIALL.

Norwood.—171, Knight's Hill, u.t. 57 yrs., g.r. 15*l.*, r. 70*l.* 950

By W. R. NICHOLAS & CO.

Chieveley, Berks.—Middle Farm, 15 a. 3 r. 20 p., f. 1,102

By ALEX. PHILLIPS.

Harlesden.—38, West Ella-rd., u.t. 96 yrs., g.r. 6*l.* 10s., e.r. 38*l.* 345
Kensal Rise.—121, Kempe-rd., u.t. 96 yrs., g.r. 7*l.* 7s., e.r. 45*l.* 400
Hampstead.—9, Sumatra-rd., u.t. 81 yrs., g.r. 5*l.* 10s., r. 32*l.* 365
28, Hillfield-rd., u.t. 71 yrs., g.r. 7*l.* 7s., e.r. 52*l.* 10s. 450

By FREDK. WARMAN.

Highbury.—71, Balfour-rd., u.t. 49 yrs., g.r. 6*l.* 6s., e.r. 48*l.* 475
169, Highbury New Park, u.t. 49 yrs., g.r. 15*l.* 1,050

By DEBENHAM, TEWSON, & CO.

Hornsey.—Middle-lane, Park View, Elm View, and St. Clare, u.t. 79 yrs., g.r. 25*l.* 10s., r. 100*l.* 850
Hammersmith.—77 and 79, Shaftesbury-rd., u.t. 52½ yrs., g.r. 12*l.*, r. 73*l.* 750
Notting Hill.—Portland-rd., the Portland Arms p.h., &c., f.g.r. 42*l.*, reversion in 49 yrs. 1,260
Elgin-cres., f.g.r's 20*l.*, reversion in 61 yrs. 590
Portobello-rd., f.g.r. 10*l.*, reversion in 22 yrs. .. 400
Hanwell.—Grove-ter., f.g.r. 10*l.*, reversion in 29 yrs. 270
Lansdowne-ter., f.g.r's 21*l.*, reversion in 28½ yrs. 490

By W. H. STICKNEY (at Hull).

Ganstead, Yorks.—A freehold close, 5 a. 0 r. 35 p. 475

By R. DONKIN & SON (at Newcastle).

Mitford, Northumberland.—The Spital Hill Estate, 159 a., f. 12,750

By SEYMOUR & WARING (at Rochester).

Hoo Street, Werburgh, Kent.—Four Elms and Hoath's Farm, 116 a. 0 r. 23 p., f. 2,000
Allhallows, Kent.—New Hall Farm, 107 a. 2 r. 16 p., f. 3,000

By THOMAS WOODS (at Masons' Hall Tavern).

Twickenham.—Main-rd., the Railway Tavern, u.t. 15 and 54 yrs., r. 80*l.*, with goodwill, also shop and premises adjoining, f., r. 36*l.* 2,125

August 1.—By BAXTER, PAYNE, & LEPPER.

Bromley Common, Kent.—Brockhampton and 3 a. 2 r. 9 p., f. 3,525
Bromley, Kent.—13, Homefield-rd., f., e.r. 130*l.* 2,150
New-rd., a block of building land, 2 a. 0 r. 7 p., f. 900
Sandford-rd., a freehold cottage and plot of land 1,300

By BRADSHAW BROWN & CO.

Poplar.—2, Hack-st., f. 300
Old Ford.—Lefevre-ter., Plym Cottage, f. 230
Bromley-by-Bow.—10, Cook-st., u.t. 53 yrs., g.r. 3*l.* 215
Poplar.—45, 47, and 49, Brabazon-st., u.t. 62 yrs., g.r. 9*l.* 430
4 and 6, Hill-place-st., u.t. 52 yrs., g.r. 6*l.* 6s. .. 320
21, Woodstock-rd., u.t. 46 yrs., g.r. 4*l.* 10s., r. 34*l.* 400

By GARRETT, WHITE, & POLAND.

Regent-st.—34, Great Marlborough-st., f., r. 120*l.* 3,420

By GRANT, WHEILDON, & CO.

Whitechapel.—37, 38, and 39, Great Prescot-st., and 95, Mansell-st., area 1,900 ft., f., r. 190*l.* 4,500
Ealing.—South Ealing-rd., Weymouth Lodge, f. .. 1,025

By J. H. LYNCH.

Leytonstone.—Hartley-rd., Fernleigh and Woodlands, u.t. 96 yrs., g.r. 10*l.* 10s., r. 58*l.* 620

By SEDGWICK, SON, & WEALL.

St. Pancras.—5 to 13 (odd), Werrington-st., u.t. 44 yrs., g.r. 30*l.*, r. 213*l.* 2,030
Southwark.—28 and 30, Merrick-sq., u.t. 25 yrs., g.r., &c., 9*l.* 10s., r. 86*l.* 655

By C. SPARROW & SON.

Finchley.—Regent's Pk.-rd., St. Kilda, f. 1,795

By E. H. HENRY.

Camberwell.—41, Coleman-rd., u.t. 61 yrs., g.r. 4*l.* 10s. 330
Old Kent-rd.—1, 3, and 5, Bridson-st., f. 465
Clapham.—58 and 60, Ferndale-rd., u.t. 70 yrs., g.r. 13*l.* 2s. 560

By F. JOLLY & CO.

Hackney.—16, Gore-rd., u.t. 53½ yrs., g.r. 10*l.* .. 650

By PROTHEROE & MORRIS.

Upminster, Essex.—Moor-lane, two enclosures of pasture, 36 a. 3 r. 31 p., f. 1,675
St. Mary's-lane (near), an enclosure of pasture, 3 a., f. 140
Leytonstone.—61, 63, and 65, Oakdale-rd., u.t. 85 yrs., g.r. 11*l.* 5s. 430

By REYNOLDS & EASON.

Stratford.—41, New-rd., f. 135
Old Ford.—101, 103, and 105, Roman-rd., f., r. 102*l.* 10s. 1,980
40 and 42, Driffield-rd., f. 770
Bethnal Green.—2 to 18 (even), Venice-st., f. 2,095
14, 15, and 16, Octagon-st., f. 625
6 and 48, Maroon-st., c. 510
Bow.—14 and 15, Harley-st, u.t. 26 yrs., g.r. 7*l.* 10s., r. 84*l.* 855
Old Ford.—114 to 142 (even), Roman-rd., u.t. 42 yrs., g.r. 47*l.* 10s., r. 460*l.* 4,340

By SIMMONS & SONS and NASH, SON & CO. (at Royston).

Ashwell, &c., Herts.—The Redlands Estate, 334 a. 3 r. 18 p., f. 6,000

By ALFRED PREECE (at Holloway).

Holloway.—44, Ashbrook-rd., u.t. 60 yrs., g.r. 6*l.* 220
21, Bedford-ter., u.t. 56 yrs., g.r. 4*l.* 210
41, 55, and 57, Cottenham-rd., u.t. 61 yrs., g.r. 16*l.* 10s. 690
29, Wray-cres., u.t. 68 yrs., g.r. 8*l.*, r. 38*l.* 320

August 2.—By W. A. DELL.

Finchley.—10 and 11, Torrington-parade, u.t. 87 yrs., g.r. 24*l.*, r. 120*l.* £1,545

By H. J. BLISS & SONS.

Canning Town.—3 to 11 (odd), John-st., u.t. 77 yrs., g.r. 21*l.* 570
11 to 19 (odd), Emily-st., u.t. 77 yrs., g.r. 21*l.* .. 550

By WALTER COBB.

Sydenham.—Mayow-rd., Fairhill, f., r. 50*l.* 950
2, Crescent-rd., u.t. 38½ yrs., g.r. 15*l.* 7s. 6d., e.r. 120*l.* 1,100

By FISHER, STANHOPE, & DRAKE.

Stroud Green.—156, Stroud Green-rd., u.t. 67 yrs., g.r. 11*l.* 13s., r. 90*l.* 1,150
Stoke Newington.—30, Rectory-rd., u.t. 39½ yrs., g.r. 7*l.*, e.r. 55*l.* 545
Stamford Hill.—45, Northfield-rd., u.t. 85 yrs., g.r. 9*l.*, r. 60*l.* 715

By GLASIER & SONS.

Putney.—252, Upper Richmond-rd., u.t. 65 yrs., g.r. 13*l.* 15s., r. 70*l.* 820
Clapham.—95, Clapham Park-rd., f., r. 40*l.* 675

By GEORGE PEARCE & SONS.

Kentish Town.—9, 11 and 13, Charlton King's-rd., u.t. 45 yrs., g.r. 4*l.* 10s. 700

By ALFRED RICHARDS.

Dalston.—Dalston lane, Hartwell's Farm Dairy and Avenue Villa, u.t. 42 yrs., g.r. 20*l.*, r. 89*l.* 650
Homerton.—23 and 25, Hassett-road, u.t. 60 yrs., g.r. 4*l.* 510

By RUTLEY, SON & VINE.

Holloway.—24 and 26, Marlborough-road, u.t. 58 yrs., g.r. 14*l.*, r. 80*l.* 395

By WINCH & SONS.

Goudhurst, Kent.—Pound Field, 20 a. 0 r. 14 p., f. 740
Four freehold cottages and 23 a. 1 r. 39 p., f. .. 740
Freehold house and shop premises, r. 30*l.* 400

By FAREBROTHER, ELLIS, & CO.

Gt. Canfield, Essex.—Canfield Hall and Marsh Farms, 392 a. 0 r. 20 p., f. 3,550
Waylett's Meadow and six cottages, 3 a. 3 r. 21 p., f. 615
The Griffin p.-h. and 1 a. 1 r. 0 p., f. 1,650
Blackhall and Evans Farms, 55 a. 3 r. 13 p., f. 560
Enclosure of land, 10 a. 0 r. 6 p., f. 150
Cottage, blacksmith's shop, and 0 a. 2 r. 1 p., f. 250
Whitehead's Cottages and 71 a. 0 r. 13 p., f. .. 450
Woolard's Ash Farm, 78 a. 2 r. 30 p., f. 600
Taverners Green and Grange Cottages and 1 a. 0 r. 8 p., f. 370
Whitehead's Farm, 83 a. 0 r. 30 p., f. 565
Deal Tree Farm, 65 a., 1 r. 8 p., f. 520
Frack Martin's Farm, 57 a. 3 r. 34 p., f. 400
Seven cottages and gardens, 1 a. 0 r. 39 p., f. .. 275
Pecker's Farm, 152 a. 3 r. 2 p., f. 1,250
The Grange Farm, 375 a. 3 r. 15 p., f. 3,000
Fanns Farm, 57 a. 1 r. 26 p., f. 650
Poplars Farm, 34 a. 3 r. 30 p., f. 350
Little Canfield, Essex.—Langthorns Farm, 104 a. 2 r. 39 p., f. 1,310
Great Dunmow, Essex.—Barnston House Farm, 108 a. 1 r. 33 p., f. 1,610
White Roding, Essex.—Greylands Farm, 47 a. 2 r. 16 p., f. 800
The Laurels, Old Rectory Cottages and Paddock, 1 a. 1 r. 26 p., f. 620
South Kensington.—Hollywood-rd., Hollywood, area 18,400 ft., f. 6,800

August 3.—By COOPER & GOULDING.

Clapton.—Evering-rd., freehold builder's yard and premises, e.r. 75*l.* 1,100

By ELLIS & SON.

Peckham.—New James-st., f.g.r's 42*l.*, reversion in 63 yrs. 906
Greenwich.—Annandale-rd., f.g.r's 25*l.* 4s., reversion in 64 yrs. 665
Harringay.—Umpeville-rd., f.g.r's 42*l.*, reversion in 83 yrs. 1,110

By Messrs. GIBSON.

Camberwell.—53 and 55, George-street, f. 840
1 and 2, Guildford-place, f. 385

By JONES, LANG, & CO.

Wandsworth.—34, Honeywell-rd., u.t. 79 yrs., g.r. 8*l.* 10s. 400
Islington.—77, Rotherfield-st., u.t. 33 yrs., g.r. 7*l.*, r. 40*l.* 255

***Contractions used in these lists.*—F.g.r.** for freehold ground-rent; **l.g.r.** for leasehold ground-rent; **i.g.r.** for improved ground-rent; **g.r.** for ground-rent; **r.** for rent; **f.** for freehold; **c.** for copyhold; **l.** for leasehold; **e.r.** for estimated rental; **u.t.** for unexpired term; **p.a.** for per annum; **yrs.** for years; **st.** for street; **rd.** for road; **sq.** for square; **pl.** for place; **ter.** for terrace; **cres.** for crescent; **yd.** for yard.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	s.	d.				
Hard Stocks	34	0	per thousand	alongside, in river.		
Rough Stocks and Grizzles	30	0	,,	,,	,,	,,
Smooth Bright Facing Stocks..	58	0	,,	,,	,,	,,
Shippers	42	0	,,	,,	,,	,,
Flettons.....	29	6	,,	,,	at railway depôt.	
Red Wire Cuts ..	34	0	,,	,,	,,	,,
Best Fareham Red	71	6	,,	,,	,,	,,
Best Blue Pressed Staffordshire ..	87	0	,,		,,	,,
Best Stourbridge Fire Bricks	84	6	,,	,,	,,	,,
Best White Glazed Stretchers.....	260	0	,,	,,	,,	,,
Headers	240	0	,,	,,	,,	,,
Quoins and Bull-nose	340	0	,,	,,	,,	,,
Double Headers..	320	0	,,	,,	,,	,,
Best Dipped Salt Glazed Stretchers and Headers ..	240	0	,,	,,	,,	,,
Quoins and Bull-nose	280	0	,,	,,	,,	,,

PRICES CURRENT (*Continued*).

	s.	d.		
Double Headers..	280	0	per thousand at railway depôt.	
Seconds Quality White and Dipped Salt Glazed	40	0	per thousand less than best.	
	s.	d.		
Thames and Pit Sand	8	0	per yard, delivered.	
Thames Ballast	6	9	,,	,,
Best Portland Cement	35	0	per ton	,,
Best Ground Blue Lias Lime..	23	6	,,	,,

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime	12s. 6d.	per yard, delivered.
Stourbridge Fire-clay in sacks,	32s. 6d.	per ton at rly. dpt.

STONE.

		s.	d.		
Ancaster in blocks		2	0	per ft. cube, deld. rly. depôt	
Bath	,, ...	1	7	,,	,,
Beer	,, ...	1	6½	,,	,,
Grinshill	,, ...	1	10	,,	,,
Brown Portland in blocks		2	2	,,	,,
Darley Dale	,,	2	2½	,,	,,
Red Corsehill	,,	2	5	,,	,,
Red Mansfield	,,	2	4½	,,	,,
Hard York	,,	2	10	,,	,,
Hard York 6 in.	sawn both sides landings, 10 sizes (under 40 ft. sup.)	2	7	per ft. super at rly. depôt.	
,, ,,	6 in. Rubbed Ditto..	2	10½	,,	,,
,, ,,	3 in. sawn both sides slabs (random sizes)	1	3	,,	,,
,, ,,	3 in. self-faced Ditto	0	9	,,	,,

SLATES.

n.	in.	£	s.	d.	
20	10 best blue Bangor..	11	5	0	per 1000 of 1200 at ry. dep.
,,	best seconds ,,	10	15	0	,, ,,
16	8 best ,,	6	2	6	,, ,,
20	10 best blue Portmadoc	10	18	0	,, ,,
16	8 ,, ,,	6	0	0	,, ,,
20	10 best Eureka unfading green.....	11	2	6	,, ,,
16	8 ,, ,,	6	15	0	,, ,,
20	10 Permanent green and Sedan green	10	0	0	,, ,,
16	8 ,, ,,	5	12	6	,, ,,

TILES.

	s.	d.		
Best plain red roofing tiles..	41	6	per 1,000 at rly. depôt.	
Hip and valley tiles....	3	7	per doz.	,, ,,
Best Broseley tiles	48	6	per 1,000	,, ,,
Hip and valley tiles....	4	0	per doz.	,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57	6	per 1,000	,, ,,
Do. ornamental Do.	60	0	,,	,, ,,
Hip tiles.....	4	0	per doz.	,, ,,
Valley tiles.....	3	9	,,	,, ,,
Best Red or Mottled Staffordshire Do. (Peakes).	90	9	per 1,000	,, ,,
Hip tiles	4	1	per doz.	,, ,,
Valley tiles.....	3	8	,,	,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	15	10	0	16	10	0
Deals: best 3 by 9	14	10	0	15	10	0
Battens: best 2½ in. by 7 in. and 8 in. and 3 in. by 7 in. and 8 in.....	12	10	0	13	10	0
Battens: best 2½ by 6 and 3 by 6 ..	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best		
Battens: seconds.....	0	10	0	,, ,,	,,	

	At per load of 50 ft.					
Fir timber: Best middling Danzig or Memel (average specification)	4	5	0	4	10	0
Seconds	3	17	6	4	5	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Swedish balks.....	2	15	0	3	0	0
Pitch pine timber (35 ft. average)..	4	0	0	4	10	

JOINERS' WOOD.

	At per standard.					
White Sea: First yellow deals, 3 in. by 11 in.....	27	10	0	28	10	0
3 in. by 9 in.	24	0	0	25	0	0
Battens, 2½ in. and 3 in. by 7 in.	20	0	0	21	0	0
Second yellow deals, 3 in. by 11 in.	22	10	0	24	0	0
,, ,, 3 in. by 9 in.	20	0	0	21	0	0
Battens, 2½ in. and 3 in. by 7 in.	16	10	0	18	0	0
Third yellow deals, 3 in. by 11 in. and 9 in.	16	10	0	17	10	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Petersburg: first yellow deals, 3 in. by 11 in.	24	0	0	25	0	0
Do. 3 in. by 9 in.	21	0	0	22	0	0
Battens.....	16	0	0	17	0	0
Second yellow deals, 3 in. by 11 in.....	18	0	0	19	10	0
Do. 3 in. by 9 in.	16	10	0	17	10	0
Battens.....	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in.....	14	10	0	15	10	0
Do. 3 in. by 9 in.	13	10	0	14	10	0
Battens.....	12	0	0	13	0	0
White Sea and Petersburg:—						
First white deals, 3 in. by 11 in..	15	10	0	16	10	0
,, ,, ,, 3 in. by 9 in. ..	13	10	0	14	10	0
Battens.....	11	10	0	12	10	0
Second white deals 3 in. by 11 in.	13	10	0	14	10	0
,, ,, ,, 3 in. by 9 in.	12	10	0	13	10	0
,, ,, battens	10	10	0	11	10	0
Pitch pine: deals	16	0	0	18	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—						
First, regular sizes	29	0	0	31	0	0
Broads (12 in. and up)	2	0	0	more.		
Oddments	22	0	0	24	0	0
Seconds, regular sizes	24	10	0	26	10	0
Oddments	20	0	0	22	0	0

[*See also page 143.*

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
*Munic Bu	South Shields Town Council	200*l.*, 100*l.*, and 50*l.*	Oct.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
School, Renfrew-road	Paisley School Board	J. Hutchison, Architect, 127, St. Vincent-street, Glasgow	Aug. 14
Chimney at Workhouse	Todmorden Guardians	J. Horsfall, Architect, Todmorden	do.
Paving Streets	Salford Corporation	L. C. Evans, Town Hall, Salford	do.
Dye House, Bingley	Southall U.D.C.	Jackson & Sons, Architects, Tanfield Chambers, Bradford	do.
Fire Engine House, &c., High-street	Yardley R.D.C.	H. R. Felkin, Surveyor, Southall	do.
Street Works, Augusta-road, &c.	St. Marychurch, Devon, U.D.C. ...	A. W. Smith, Surveyor, 460, Stratford-rd., Sparkhill, Birmingham	do.
Additions to Residence, Burton Park, Ireland	Garioch District Committee	W. H. Hill & Son, Architects, 28, South-mall, Cork	do.
Sewers	Mr. P. H. Edwards	R. H. Worth, Civil Engineer, 42, George-street, Plymouth	Aug. 15
Sewerage Works, Kemnay	Stoke-upon-Trent Corporation	Jenkins & Marr, Civil Engineers, 16, Bridge-street, Aberdeen	do.
Rebuilding Hollymount, Rathmullan, co. Donegal ..	Felixstowe U.D.C.	J. P. M'Grath, Architect, 28, Carlisle-road, Londonderry	do.
Paving Works, High-street and London-road	do.	J. B. Ashwell, Town Hall	do.
Granite (1,500 tons)	Lewis Merthyr Collieries, Ltd. ...	G. S. Horton, Surveyor, Town Hall	do.
Additions to Cottages, Middleton-road, Alston	do.	G. Dale Oliver, County Architect, Carlisle	do.
Twenty-four Cottages, near Porth	Colne (Lancs.) School Board	James & Morgan, Architects, Charles-street Chambers, Cardiff ..	do.
Three Houses, near Porth	Ayrshire County Council	do.	do.
Schools, Lord-street	Mr. J. A. Sykes	H. Holgate, Architect, Market-street, Colne	do.
Water Supply Works, Kilbirnie	Middlesbrough Guardians	W. R. Copland, Civil Engineer, 146, West Regent-street, Glasgow	do.
Alterations, the Rock Inn, Morley	Watford U.D.C.	Buttery & Birds, Architects, Morley	do.
Alterations to Schools at Workhouse	do.	Lofthouse & Sons, 62, Albert-road, Middlesbrough	do.
Kerb, Granite Cubes, &c.	South Dublin R.D.C.	Engineer, 14, High-street, Watford	do.
Granite Road Metal (2,000 tons)	Cashel (Ireland) Guardians	do.	do.
Drainage Works, Rathfarnham	Trustees	A. Scott & Son, Architects, Drogheda	do.
Hotel, Blue Row, Bishop Auckland	St. Giles (Devon) School Board ..	F. H. Livesay, Architect, Bishop Auckland	Aug. 16
Additions to Workhouse	Met. Bank of England & Wales, Ld	W. Phelan, Workhouse, Cashel	do.
Chapel, Roathe, Cardiff	Managers	Rees & James, Architects, 37, St. Mary-street, Cardiff	Aug. 17
School Buildings	Mr. E. E. Bevan	Wise & Wise, Architects, Launceston	do.
Alterations to 20 & 21, High-street, Haverfordwest ..	Skerries (co. Dublin) Baths Comte.	D. E. Thomas, Architect, Victoria-place, Haverfordwest	Aug. 18
Alterations to Chapel, Lion-street, Blaenavon	Kingston-on-Thames Corporation	S. Alsop, 13, New William-street, Blaenavon	do.
Farm Buildings, Farnham	Sunbury-on-Thames U.D.C.	A. H. Guyer, Architect, South-street, Farnham	do.
Re-erection of the New Inn, Resolven, Wales	Woodford (Essex) U.D.C.	J. Cook Rees, Architect, St. Thomas's Chambers, Neath	do.
Baths, Concert Hall, &c.	Sedgley School Board	F. Shaw, Architect, 20, Laurence-street, Drogheda	do.
*Electric Works Extension	Bredbury U.D.C.	Borough Surveyor, Clattern House	Aug. 20
Sewerage Works	Brighton County Council	H. F. Coales, Surveyor, Council Offices	do.
Granite Road Metal (1,500 tons)	Maesteg Hospital Committee	J. A. Simpson, Woodford Green	do.
Additions to Schools	Lytham, Lancs. U.D.C.	S. H. Eachus, Architect, Lichfield-street, Wolverhampton	do.
Sewage Outfall Works	South Mines R.D.C.	W. Spinks, Engineer, 20, Park-row, Leeds	do.
Foreman's House, &c., at Mill Oak	Leeds Tramways Committee	Town Clerk, Town Hall, Brighton	Aug. 21
Hospital	Hull School Board	J. Humphreys, Civil Engineer, Town Hall Chambers, Maesteg ...	do.
Purifying House at Gasworks	Lexden and Winstree R.D.C.	T. Newbigging & Son, Engineers, 5, Norfolk-street, Manchester..	do.
Granite Road Metal, Barnet	Fenny Stratford School Board	G. D. Byfield, 16, High-street, Barnet	do.
Boiler House at Generating Station, Crown Point	Shoreditch Guardians	City Engineer, Municipal Buildings, Leeds	do.
House and Cottages, Portalade, Sussex	Aylesbury U.D.C.	F. J. Tillstone, Town Hall, Brighton	do.
Additions to Schools, Warone-street	Mr. H. M'Lennan	B. S. Jacobs, Architect, Bowlalley-lane, Hull	do.
*Bridges, &c.	Brighton County Council	See Advertisement	do.
*Girls School	Taunton T.C.	Clerk, School Board Offices, Fenny Stratford	do.
*Alterations at Infirmary	West Ham County Council	F. J. Smith, Parliament Mansions, Victoria-street, S.W.	Aug. 22
Paving, &c., Market-square	Aston Guardians	J. H. Bradford, Surveyor, 2, Rickford's-hill, Aylesbury	do.
House, Springhill Nurseries, Aberdeen	Derbyshire County Council	Jenkins & Marr, Civil Engineers, 16, Bridge-street, Aberdeen	do.
*Concrete Groyne	Marlborough (Wilts) Corporation	Borough Engineer, Town Hall, West Ham, E.	Aug. 24
*Storage Reservoir, &c.	Messrs. Bushill & Sons	See Advertisement	Aug. 27
*Sewers, &c.	Hand-in-Hand Fire and Life Office	C. Whitewell, Architect, 23, Temple-row, Birmingham	do.
Additions to Workhouse, Gravelly Hill, nr. Birmingham	Messrs. Robinson Bros.	J. Somes Story, County Surveyor, County Offices, Derby	Aug. 28
Police Station, Clown	Mr. T. Lister	Boreham & Morton, Surveyors, 24, John-street, Sunderland	Aug. 29
Church Restoration, Wilton-le-Wear		See Advertisement	Aug. 31
*Taking Down Town Hall and Erecting New Hall, &c.		H. Reed, Architect, 12, Castle-street, Exeter	Sept. 4
Additions to Factory, Cow-lane, Coventry		Oliver & Dodgshun, Architects, 3, East-parade, Leeds	No date
Business Premises, Park-row, Leeds		J. Robinson, 4, Marley-view, Beeston	do.
Nine Houses, House and Shop, Beeston-road, Leeds..		J. Graham, Architect, Bank-street, Carlisle	do.
Business Premises, St. Cuthbert's-lane, Carlisle		R. M. English, Stamford	do.
Water Supply Works, Uffington, near Stamford		A. E. Kirk, Architect, 13, Bond-street, Brighouse	do.
House, Brighouse		Baker & May, Architects, Colchester	do.
Road Works, &c., Sea View-road, Brightlingsea			do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Surveyor and Inspector of Nuisances	Waltham Holy Cross U.D.C.	275*l.* per annum	Aug. 22
*Clerk of Works	Coventry Corporation	3*l.* 10*s.* per week	do.
*Assistants	do.	.....	do.
*Clerk of Works	Hackney Vestry	4*l.* per week	Aug. 24
*Engineer and Chief Surveyor	Tottenham U.D.C.	600*l.* per annum	Sept. 3
*Architectural Assistant (temporary)		3½ guineas per week	No date

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. Contracts, pp. iv. vi. viii. x. & xii. *Public Appointments, pp.* xviii. xix. & xii.

PRICES CURRENT (*Continued*).

	£	s.	d.	£	s.	d.
Kauri Pine—						
Planks, per ft. cube	0	3	6	0	4	0
Danzig and Stettin Oak Logs—						
Large, per ft. cube	0	2	6	0	2	8
Small ,, ,,	0	2	4	0	2	7
Wainscot Oak Logs, per ft. cube	0	5	6	0	6	0
Dry Wainscot Oak, per ft. sup. as inch	0	0	8	0	0	9
Mahogany—						
Honduras, Tabasco, per ft. sup. as inch	0	0	9	0	0	11
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	0
Walnut, American, per ft. sup. as inch	0	0	10	0	1	0
Teak, per load	16	0	0	20	0	0
American Whitewood Planks—						
Per ft. cube	0	2	3	0	3	0

JOISTS, GIRDERS, &c.

	In London, or delivered to Railway Vans, per ton. £	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	9	7	6	-	-	-
Compound Girders ,, ,,	13	10	0	-	-	-
Angles, Tees and Channels, ordinary sections	12	10	0	14	10	0
Flitch Plates	12	0	0	0	0	0

METALS.

	Per ton, in London. £	s.	d.	£	s.	d.
IRON.—						
Common Bars	10	5	0	10	15	0
Staffordshire Crown Bars, good merchant quality	11	5	0	11	15	0
Staffordshire "Marked Bars"	13	5	0	-	-	-
Hoop Iron, basis price	11	5	0	11	15	0
,, ,, galvanised	17	0	0*	-	-	-
(* And upwards, according to size and gauge.)						
Sheet Iron, Black.—	£	s.	d.	£	s.	d.
Ordinary sizes to 20 g.	11	10	0	-	-	-
,, ,, to 24 g.	12	5	0	-	-	-
,, ,, to 26 g.	13	15	0	-	-	-
Sheet Iron, Galvanised, flat, ordinary quality.—						
Ordinary sizes, 6 ft. by 2 ft. by 3 ft. to 20 g.	14	15	0	-	-	-
,, ,, 22 g. and 24 g.	15	5	0	-	-	-
,, ,, 26 g.	16	15	0	-	-	-
Sheet Iron, galvanised, flat, best quality.—						
Ordinary sizes to 20 g.	18	10	0	-	-	-
,, ,, 22 g. and 24 g.	19	0	0	-	-	-
,, ,, 26 g.	20	10	0	-	-	-
Galvanised Corrugated Sheets.—						
Ordinary sizes, 6 ft. to 8 ft. 20 g.	14	0	0	14	15	0
,, ,, 20 g. and 24 g.	14	15	0	15	10	0
Cut nails, 3 in. to 6 in. (Under 3 in. usual trade extras.)	11	10	0	-	-	-
LEAD—Sheet, English, 3 lbs. & up.	20	7	6	-	-	-
Pipe in coils	20	17	6	-	-	-
ZINC—Sheet—						
Vieille Montagne ton	28	0	0	-	-	-
Silesian	27	10	0	-	-	-
COPPER—						
Strong per lb.	0	1	0	-	-	-
Thin ,,	0	1	2	-	-	-
Copper nails ,,	0	1	3	-	-	-
TIN—English Ingots ,,	0	1	6	-	-	-
SOLDER—Plumbers' ,,	0	0	8	-	-	-
Tinmen's ,,	0	0	10	-	-	-
Blowpipe ,,	0	1	0	-	-	-

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
,, fourths	2¾d. ,, ,,
21 oz. thirds	3¼d. ,, ,,
,, ,, fourths	3d. ,, ,,
26 oz. thirds	4¼d. ,, ,,
,, ,, fourths	4d. ,, ,,
32 oz. thirds	5¼d. ,, ,,
,, ,, fourths	5d. ,, ,,
Fluted sheet, 15 oz.	3½d. ,, ,,
,, ,, 21 ,,	4¼d. ,, ,,
½ Hartley's Rolled Plate	3d. ,, ,,
⅝ ,, ,, ,,	3½d. ,, ,,
¾ ,, ,, ,,	4d. ,, ,,

OILS, &c.

	£	s.	d.
Raw Linseed Oil in pipes per gallon	0	3	1
,, ,, ,, in barrels ,,	0	3	2
,, ,, ,, in drums ,,	0	3	4
Boiled ,, ,, in pipes ,,	0	3	4
,, ,, ,, in barrels ,,	0	3	5
,, ,, ,, in drums ,,	0	3	7
Turpentine, in barrels ,,	0	2	11
,, in drums ,,	0	3	2
Genuine Ground English White Lead per ton	27	15	0
Red Lead, Dry ,,	24	0	0
Best Linseed Oil Putty per cwt.	0	9	6
Stockholm Tar per barrel	1	7	0

VARNISHES, &c.

	per gallon. £	s.	d.
Fine Elastic Copal Varnish for outside work	0	16	6
Best Elastic Copal Varnish for outside work	1	0	0
Best Elastic Carriage Varnish for outside work	0	16	6
Best Hard Oak Varnish for inside work	0	10	6
Best Extra Hard Church Oak Varnish for inside work	0	10	6
Fine Hard Copal Varnish for inside work	0	16	0
Best Hard Copal Varnish for inside work	1	0	0
Best Hard Carriage Varnish for inside work	0	16	0
Extra Pale Paper Varnish	0	12	0
Best Japan Gold Size	0	10	0
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	9	0
Berlin Black	0	13	6
Knotting	0	10	0
Best French and Brush Polish	0	19	0

TO CORRESPONDENTS.

W. H. H. (your letter is not a suitable one to publish.)

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BATH.—For the erection of a house, stables, &c., Midford, for Mr. W. B. Grant. Mr. H. W. Matthews, architect, Terrace-walk, Bath. Quantities by architect :—

Wills & Sons, Bath	£3,210	Mannings & Son, Bath	£2,740
Rudman, Wilts	2,921	Erwood & Morris, Bath	2,625
Hayward & Wooster, Bath	2,884		
Long & Sons, Bath	2,765		

BRIGHOUSE.—For the erection of a hospital laundry, Clifton, for the Joint Hospital Board. Messrs. Sharpe & Waller, architects, 32, Bradford-road, Brighouse. Quantities by the architects :—

Masonry.—Marshall & Co., Brighouse	£236	10	6
Joinery.—Wm. Halliwell, Brighouse	76	18	0
Plumbing.—Fred. Ogden, Brighouse	46	0	0
Plastering.—Castle & Hynes, Brighouse	33	10	0
Slating.—Jas. Smithies, Bradford	37	18	6
Painting.—A. Marshall, Rastrick	35	0	0
Laundry Machinery.—Tomlinson & Milan, Huddersfield	317	10	0
Boiler.—Tomlinson & Milan, Huddersfield	132	0	0

BRIGHOUSE.—For the erection of four houses Dyson-street, Brighouse, for Messrs. Dyson & Broomhead (mason's work excepted). Messrs. Sharp & Waller, architects, 32, Bradford-road, Brighouse. Quantities by architects :—

Carpentry and Joining.—B. Rayner, Rustrick	£157	0	
Plumbing and Glazing.—A. L. Waddington, Brighouse	53	2	
Plastering.—J. Barraclough, Brighouse	55	0	
Painting.—E. Earnshaw, Brighouse	12	0	

DEAL (Kent).—For the erection of Wesleyan Sunday-school buildings, for the school trustees. Mr. C. L. Crowther, architect, Deal. Quantities by the architect :—

Austin & Lewis	£1,672	0	
Gibbons & Son	1,559	0	
G. & A. J. Cottew	1,532	0	
T. Turner	1,469	0	
Lewis & Sons	1,450	0	
Denne & Son	£1,430	0	
A. W. Thompson	1,289	16	
F. Collyer	1,282	0	
Hayward & Son Wellington-road, Deal†	1,259	0	

HANLEY.—For the erection of shop, Lamb-street, Hanley, for Messrs. Huntbach & Co. Messrs. R. Scrivener & Sons, architects, Hanley :—

J. Gallimore	£4,534	Grant & Son	£4,130
Bennett Bros.	4,500	G. Ellis, Hanley*	4,100
Cornes & Son	4,152	T. Godwin	4,099

KING'S LYNN.—For extensions to electricity station for the Corporation. Mr. H. J. Weaver, Borough Engineer, Town Hall, King's Lynn :—

A. F. Foreman	£1,395	10	6
Robert Dye	1,292	0	10
Bardell Bros., King's Lynn*	£1,178	0	0

LEYLAND.—For the erection of business premises, Towngate, for the Leyland and Farington Industrial Co-operative Society, Limited. Mr. H. Howarth, architect, Morecambe. Quantities by architect :—

Excavating, Bricklaying, Flagging, and Slating.—Brailsford & Hayes*	£589	0	
Masonry.—Robert Berry*	240	0	
Carpentry and Joinery.—James Tomlinson*	460	0	
Plumbing and Painting.—Thomas Cocker*	135	5	
Plastering.—J. Tomlinson*	42	17	

[All of Leyland.]

LONDON.—For certain structural alterations, and new shop fronts, &c., to Nos. 31 to 37, Westbourne-grove, for Messrs. Wm. Whiteley, Limited. Messrs. Howgate & Keith, architects, 70, Gower-street, W.C. :—

Holloway Bros.	£5,620	Dove Bros.	£4,995
Hall, Beddall, & Co.	5,400	Lawrance & Sons	4,548

LONDON.—For the erection of new counting-house in Douglas-place, extension of shops, Nos. 31 to 37, Westbourne-grove, for Messrs. Wm. Whiteley, Limited. Messrs. Howgate & Keith, architects, 70, Gower-street, W.C. :—

Holliday & Greenwood	£39,256	McCormick & Sons	£37,890
Lascelles & Co.	38,900	Lawrance & Sons	37,773
Holloway Bros.	38,500	Simpson & Son	36,442

LONDON.—For sanitary and hot-water engineer's work at The Mount, Duppas Hill, Croydon, for Mr. W. F. Knight. Mr. H. Fuller Clark, architect, 28, John-street, Bedford-row, W.C. :—

Simpson & Sons	£445	Boulting & Sons*	£377

NORTHAMPTON.—For fitting up Bective Shoe Factory, Northampton, for Messrs. James Branch & Sons, Limited. Mr. Alexander Anderson, architect, Northampton. Quantities by the architect :—

Benches, Partitions, Cupboards, Office, and Gas Fittings.

E. Archer	£720	A. J. Chown, Northampton*	£700
H. Beeby	710		

Heating, Low Pressure System.

Mobbs & Co.	£530	A. Marriott, Higham Ferrers*	£299
Lowke	383		
Jones & Attwood	320		

Shafting, Pullies, &c.

Pearson & Bennion	£397	Gascoigne	£333
Lowke	395	Stimpson	321
Grose Norman	367	Whitfield, Kettering*	299

Electric Lighting.

Alliance Co.	£468	National Electric Wiring Co., Northampton*	£178
Whitmy Smith	248		
Duckenfield	240		
Hanwell	234		

Piping for Dust Extraction.

Whitfield	£130	British United Shoe Machinery Co., Leicester*	£109
Standard Engineering Co.	114		
Brinkloe	107		

NORTHAMPTON.—For erection of new residence for Dr. Cairns, Barrack-road, Northampton. Mr. Alexander Anderson, architect, Northampton :—

A. J. Chown | Sharman & Son*

* Accepted at schedule of prices.

Plumbing and Decorator Work.

C. Westley | H. Hanwell*
E. Nichols |

* Accepted by schedule.

NORTHAMPTON.—For erection of new warehouses, workshops, Northampton, for Messrs. Jeffery, Sons, & Co., Ltd. Mr. Alexander Anderson, architect, Northampton. Quantities by architect :—

W. Heap	£2,745	Wingrove & Stanley	£2,510
A. P. Hawtin	2,655	Harper	2,432
Branson	2,610	Crow & Gardner, Northampton‡	2,400
Wilford & Judkin	2,555		
Allright	2,530		

‡ Accepted subject to modification.

NORTHAMPTON.—For erection of new leather warehouse, Fish-street, Northampton, for Messrs. Malcolm Inglis & Co., Glasgow. Mr. Alexander Anderson, architect, Abington-street, Northampton. Quantities by architect :—

Bricklaying, Masonry, and Carpentry Work.

H. Martin	£6,923	G. J. Fisher	£5,967
Sharman & Son	6,816	H. Green	5,963
J. M. Panting	6,608	E. Archer, Northampton*	5,874
Wingrove & Stanley	6,125		
A. P. Hawtin	5,985		

Plumbing, Glazing, and Painting.

R. Cleaver	£1,025	Westley	£802
A. P. Hawtin	970	Martin	888
H. Green	960	Harris	872
E. Archer	937	Nichols	867
Wingrove & Stanley	920	Hanwell, Northampton*	819

PAIGNTON.—For alterations, additions and new stabling at Kingshurst, for Mr. W. Morrison. Mr. W. G. Couldrey, architect, Paignton. Quantities by Mr. Vincent Cattermole Brown, Paignton :—

R. F. Yeo	£2,794	15	0
E. Westlake	2,766	0	0
R. Harris	2,716	0	0
E. P. Bovey	2,673	0	0
Webber & Sons	£2,648	10	6
C. & R. E. Drew Paignton*	2,490	8	4

PETERSTON-SUPER-ELY.—For additions to National School, Peterston-super-Ely, near Cardiff. Mr. Geo. E. Halliday, architect, 14, High-street, Cardiff. Quantities by Mr. J. W. Rodger, Cardiff :—

Knox & Wells	£447	0	0
C. H. Cooksley	400	0	0
Blacker Bros.	368	14	2
Couzens & Co.	362	8	4
F. Couzens	344	16	4
J. Morgan	340	10	0
E. A. Thomas	£330	0	0
Steadman & Harris, Peterston*	324	16	0
W. Cox	296	0	0

ROCHFORD (Essex).—For additions to schools for the School Board. Mr. W. Y. Hobbiss, architect, 57, High-street, Southend-on-Sea :—

Shelborne & Co.	£509	12	0
Howard & Ruffell	452	19	4
F. & E. Davey	431	0	0
W. E. Davey	430	0	0
A. J. Golding	413	12	2
Davis & Leaney	£399	0	0
A. Woodiwiss	398	8	0
Dupont & Co.	395	0	0
E. West	390	0	0
S. Norden, Rochford, Essex*	368	16	0

RUSHDEN, NORTHANTS.—For the erection of a Baptist Chapel. Mr. H. H. Dyer, architect, 1, Sheep-st., Northampton. Quantities by architect.

E. Mitchel	£5,712	T. Wilmot, junr.	£4,805
T. H. Coleman	5,430	H. Sparrow	4,799
E. Brown & Son	5,300	R. Marriott	4,778
Hacksley Bros.	5,089	Bayas, Griffith-st., Rushden*	4,763
Geo. Henson	5,060		
Whittinton & Tomlin	4,839		

[See also next page.

RUSHDEN.—For extensions and alterations to shoe factory, for Messrs. Cunnington Bros., Rushden. Mr. Alexander Anderson, architect, Abington-street, Northampton. Quantities by architect :—

Brown & Son	£2,142	T. Swindall	£1,974
Willmott	2,050	E. Mitchell	1,973
T. & C. Berrill	2,013	H. Sparrow (Rushden)*	1,900
Whittington & Tomalin	1,997		

SHREWSBURY. — For alterations to Shrewsbury College. Messrs. Dalgleish & Dickens-Lewis, architects, Shrewsbury. Quantities by the architects :—

G. H. Bickerton	£1,780	John Gethin	£1,694
Geo. Bullock	1,727	Price & Sons, Shrewsbury*	1,660
Henry Price	1,699		

THORNBURY (Glos.).—For the erection of a villa residence, Milbury Heath, for Mr. G. J. Barrett. Mr. S. Fudge, architect, Thornbury :—

Bruton & Son	£1,550 0	E. Preece, Bristol*	£933 10
J. Slade	1,370 6		

WARMINSTER.—For the erection of a residence, Boreham-road. Mr. H. F. Price, architect, Weston-super-Mare. Quantities by architect :—

Cock & McLean	£2,830 0 0	G. & J. E. Stokes	£2,583 0 0
P. J. Ponton	2,738 13 2	Butcher & Son	2,475 2 10
J. Gaisford	2,703 0 0	C. Addicott, Weston-super-Mare*	2,404 8 0
Parsons & Son	2,684 9 7		
H. Franklin	2,675 16 5		

LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following list of tenders. Mr. T. J. Bailey is the Board's Architect :—

ALDENHAM-STREET.—Painting :—

T. Cruwys	£233 0	Wall & Co.	£170 15
J. W. Dixon	230 0	W. Chappell	160 0
W. Brown	179 6	Marchant & Hirst*	152 10

ATLEY-ROAD.—Painting :—

Gibb & Co.	£277 0	G. Wales	£213 14
S. H. Corfield	270 0	Elkington & Sons	197 0
J. Kybett	253 0	J. T. Robey	194 0
A. W. Derby	244 0	J. Haydon*	168 10

BROAD-STREET.—Painting :—

S. H. Corfield	£275 0	Gibb & Co.	£234 0
J. T. Robey	268 0	A. W. Derby	227 0
J. F. Holliday	262 0	J. Kybett	211 10
Johnson & Co.	257 0	G. Barker*	169 0

CHEQUER-STREET.—Painting :—

T. Cruwys	£230 0 0	Bristow & Eatwell	£164 14 0
J. W. Dixon	216 0 0	W. Hornett	153 18 0
B. E. Nightingale	189 0 0	Marchant & Hirst	149 10 0
W. Banks	174 15 6	W. Chappell*	135 0 0

COLUMBIA-ROAD.—Painting :—

S. H. Corfield	£179 0 0	Elkington & Sons	£135 18 11
J. F. Holliday	172 0 0	G. Barker	130 0 0
G. Wales	152 0 0	M. Pearson	130 0 0
Silk & Son	147 0 0	J. Haydon	114 10 0

DETMOLD-ROAD.—Painting :—

McCormick & Sons	£141 0	G. Barker	£107 0
Silk & Son	121 10	Heard & Co.	104 0
A. W. Derby	120 0	G. Wales	101 0
T. Cruwys	108 0	Barrett & Power*	90 0

FARNCOMBE-STREET.—Painting :—

White & Co.	£249 0	Johnson & Co.	£150 10
E. Triggs	168 0	G. Brittain	133 0
W. Banks	165 0	G. Barker*	130 0

GILLESPIE-ROAD.—Painting :—

F. Britton	£298 0	Stevens Bros.	£166 0
Silk & Sons	230 10	G. Barker	156 0
McCormick & Son	210 0	J. W. Dixon	134 0
G. Wales	188 0	C. & W. Hunnings*	102 10

GOODRICH-ROAD.—Painting :—

W. V. Goad	£220 14	Maxwell Bros.	£189 9
J. & C. Bowyer	214 0	C. G. Jones	184 0
Rice & Son	197 0	W. J. Mitchell	179 0
H. Line	190 0	G. Kemp*	175 0

GLOUCESTER-GROVE EAST.—Painting :—

R. S. Ronald	£147 2	C. Gurling	£96 0
S. Polden	125 0	W. Hornett	96 0
Lathey Bros.	119 0	Edwin Flood	94 0
W. Hammond	114 0	F. Chidley*	86 4

OLD PALACE.—Painting interior and exterior :—

Gibb & Co.	£572	T. H. Jackson	£432
S. H. Corfield	510	G. Barker	409
J. Kybett	491	A. W. Derby	382
A. E. Symes	490	J. T. Robey*	345

QUEEN'S HEAD-STREET.—Painting :—

McCormick & Sons	£210	J. W. Dixon	£151
Barrett & Power	163	Marchant & Hirst	148
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